NEW YORK STATE OF OPPORTUNITY. | Department of Public Service

Existing Thermal Energy Networks (TENs) Technical Conference (Case 22-M-0429)

March 25, 2025

Meeting Procedures

Before beginning, a few reminders to ensure a smooth discussion and engagement of Virtual Participants:

- Virtual participants will be muted upon entry.
- Please use the hand raise function if you'd like to ask a question. The meeting host will unmute and call on participants individually so that you can speak.
- Please be brief in your comments to allow for as many participants to speak as possible. Please state your name and affiliation when asking a question.
- Questions may also be entered in writing through the Chat feature.
- Presentations will be posted to the Case 22-M-0429 in DMM.

Objectives for Today

- Bring together the large and diverse cross-section of stakeholders interested in learning about TENs to continue and enhance our collective learning.
- Hear about a variety of financially sustainable systems – their journeys, business models, technologies – to inform our work.
- Recognize that while each project is unique and not necessarily wholly replicable for our needs – insights are useful to inform NYS decision-making.
- Provide a forum for purposeful engagement and discussion.

UTENJA (July 2022)

- Requires the PSC to commence a proceeding to consider “the appropriate ownership, market and rate structures for thermal energy networks and whether the provision of thermal energy by gas and/or electric utilities is in the public interest.”
- Required the seven largest gas, electric, or combination utilities to proposed between 1 and 5 UTEN pilot projects.
- Expands the regulatory scope of the Commission and DPS to create and effectively regulate UTEN service.
- Requires the Commission expeditiously promulgate rules and regulations that specifically address fair market access rules, exempt “small-scale” TENs from Commission regulation, promote the training and transition of utility workers impacted by the Act, and encourage third-party participation and competition.

Order Adopting Initial UTEN Rules (July 18, 2024)

- UTENJA did not specifically address existing systems that have been in operation without Commission regulation.
- To the extent that these systems do meet the definition of “thermal energy network,” the Commission stated it is appropriate to avoid unduly burdening their operations by imposing a nascent TEN regulatory framework.
- Accordingly, the Commission exempts from regulation as “small-scale” TENs, systems, that were in operation prior to July 5, 2022, the effective date the Act.
- Requested that existing systems provide information on their ownership, operation and key characteristics that may be useful. This information intended to provide insight into the full population of district energy systems in NY and to understand where, how and for whom they operate.

Order Adopting Initial UTEN Rules (July 18, 2024)

- "To best **glean information from these existing district energy systems** in a transparent manner, the Commission directs Staff to hold at least one technical conference. Such **technical conference** shall engage stakeholders, utilities, and other interested parties in an exploration of these existing systems to improve Staff's, utilities', and interested stakeholders' **knowledge of the ways in which these systems currently operate, to effectively serve their customer bases**."
- "Such **knowledge of the myriad operational, ownership, and oversight structures** that undergird the successful **provision of thermal energy service** via these systems today **will be instructive** as we further deliberate on the **characteristics of TENs that could be exempted from Commission regulation** and **the appropriate regulatory framework for UTENs to allow for the expansion of thermal energy networks at scale**."

Format and Logistics

Estimated Time:	Agenda
10:00-10:10 am	Opening Remarks
10:10-10:30 am	Gerard MacDonald, Principal, ReShape Strategies
10:30-11:00 am	Alen Postolka, P.Eng, COO, Lulu Island Energy Company, Richmond, BC
11:00-11:30 am	Carson Gemmill, VP, Solutions & Innovations, Enwave, Toronto, ON
11:30-12:00 pm	Panel Discussion #1 - Moderator: Rob Thornton, President & CEO, IDEA
12:00-12:50 pm	Lunch (on your own)
1:00-1:30 pm	Kris Sellstrom, PE, Deputy GM Jamestown Board of Public Utilities, NY
1:30-2:00 pm	Michael Ahern, SVP, CDO, Ever-Green Energy, District Energy St Paul, MN
2:00-2:30 pm	Mark Spurr, Legislative Director at IDEA, FVB Energy
2:30-3:00 pm	Panel Discussion #2 - Moderator: Rob Neimeier, Ramboll
3:00-3:45 pm	Full Workshop Panel Discussion - Moderators: Rob Neimeier and Rob Thornton
3:45-4:00 pm	Closing Remarks

NYS DPS TENs Technical Workshop

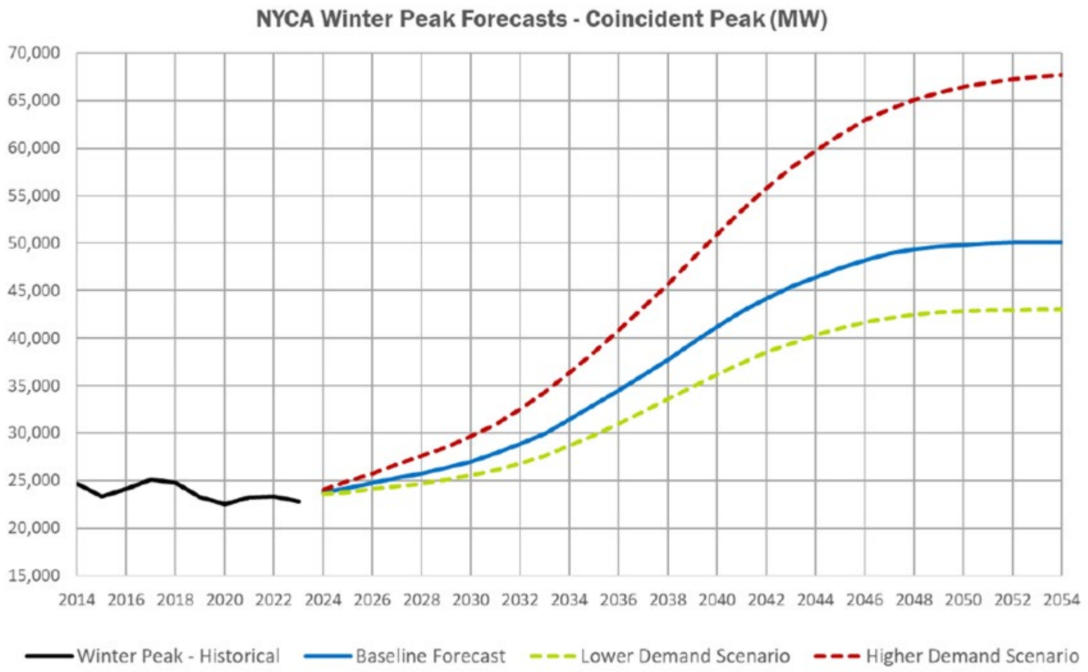
Area-Based Thermal Planning & BC Lower Mainland Overview

March 25, 2025
Albany, NY

RESHAPE STRATEGIES

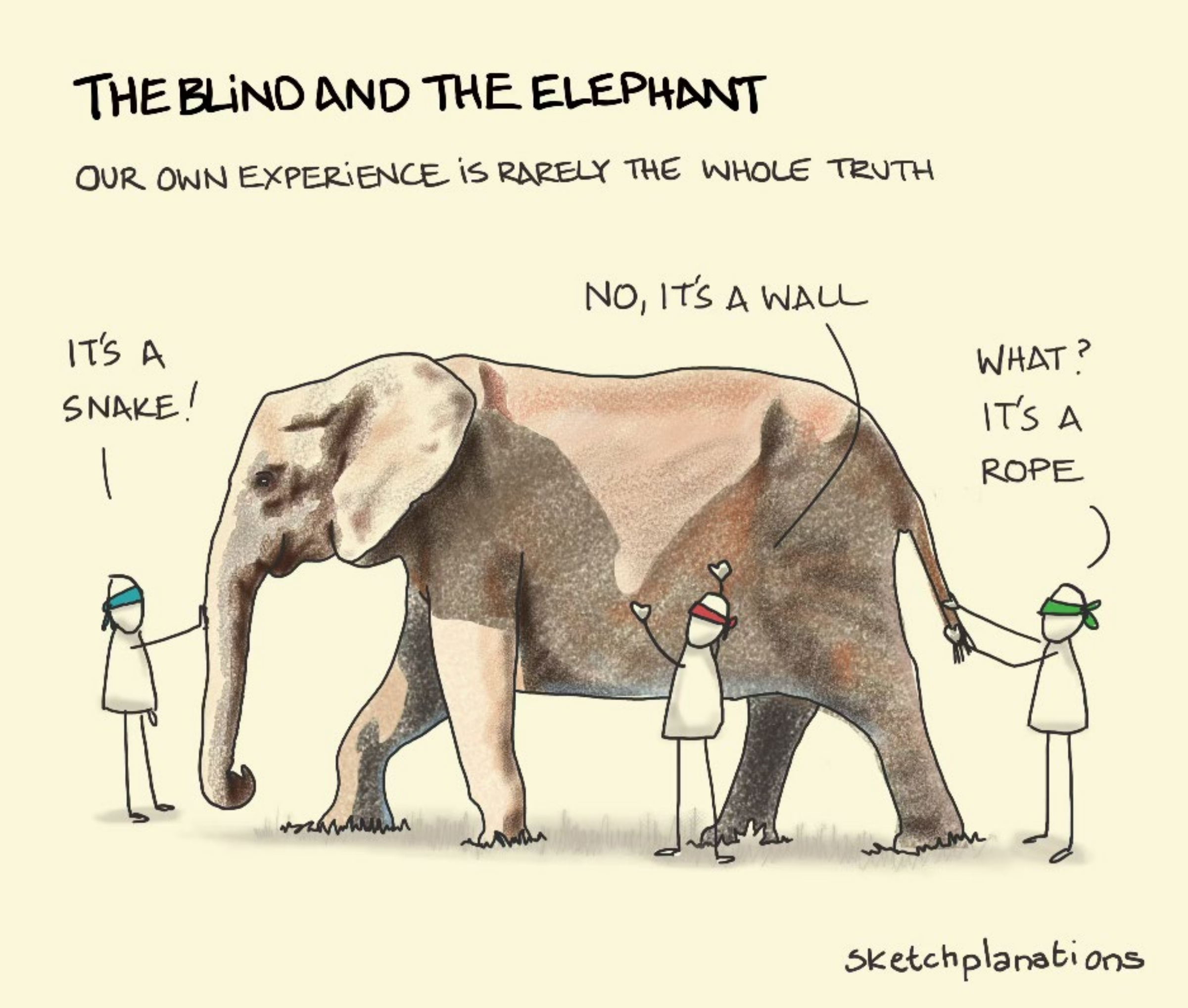
WHAT IS THE PROBLEM WE ARE TRYING TO SOLVE?

RESHAPE STRATEGIES



Source: 2024 Reliability Needs Assessment (RNA) A Report from the New York Independent System Operator November 19, 2024

WHAT IS DE / WHAT IS A TEN?

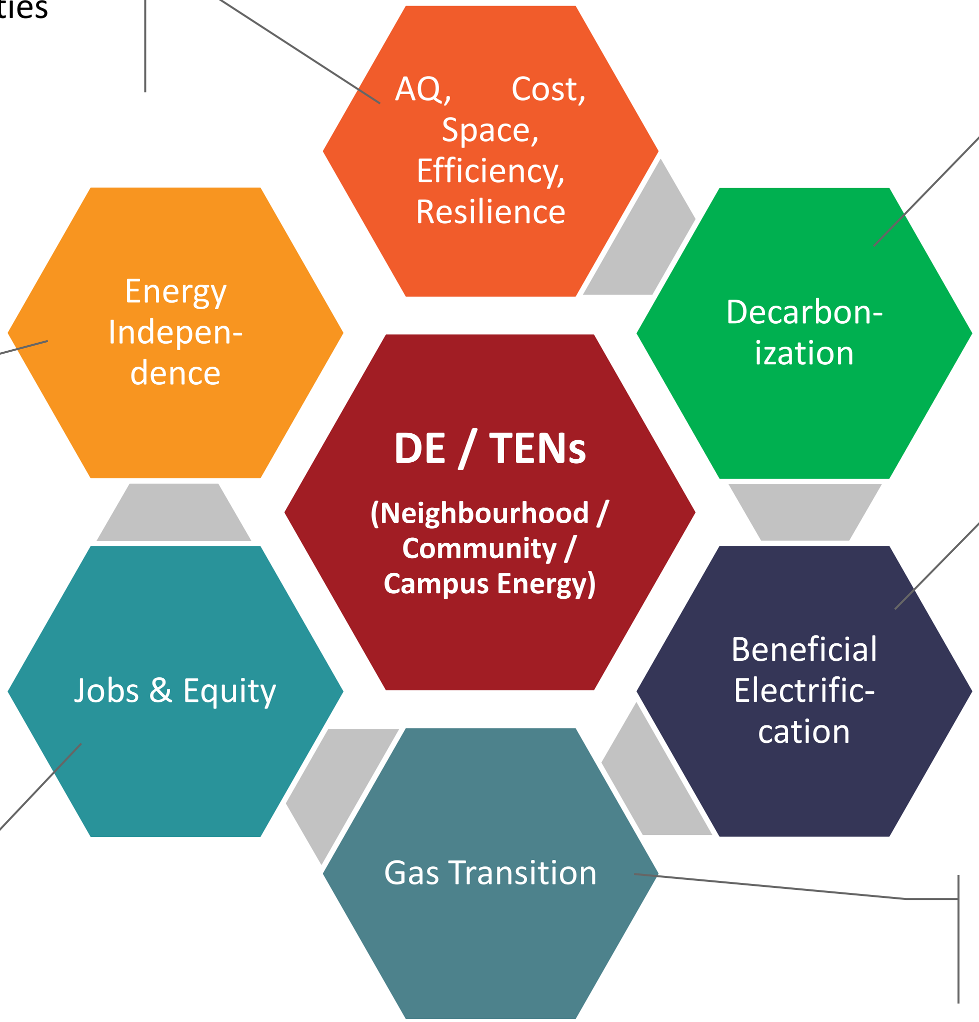


ONE PLATFORM: MULTIPLE OBJECTIVES

Legacy steam systems in large NA Cities more than a century ago

Nordics in 70's

E-NGO's in US Northeast & Canada In post-Covid era



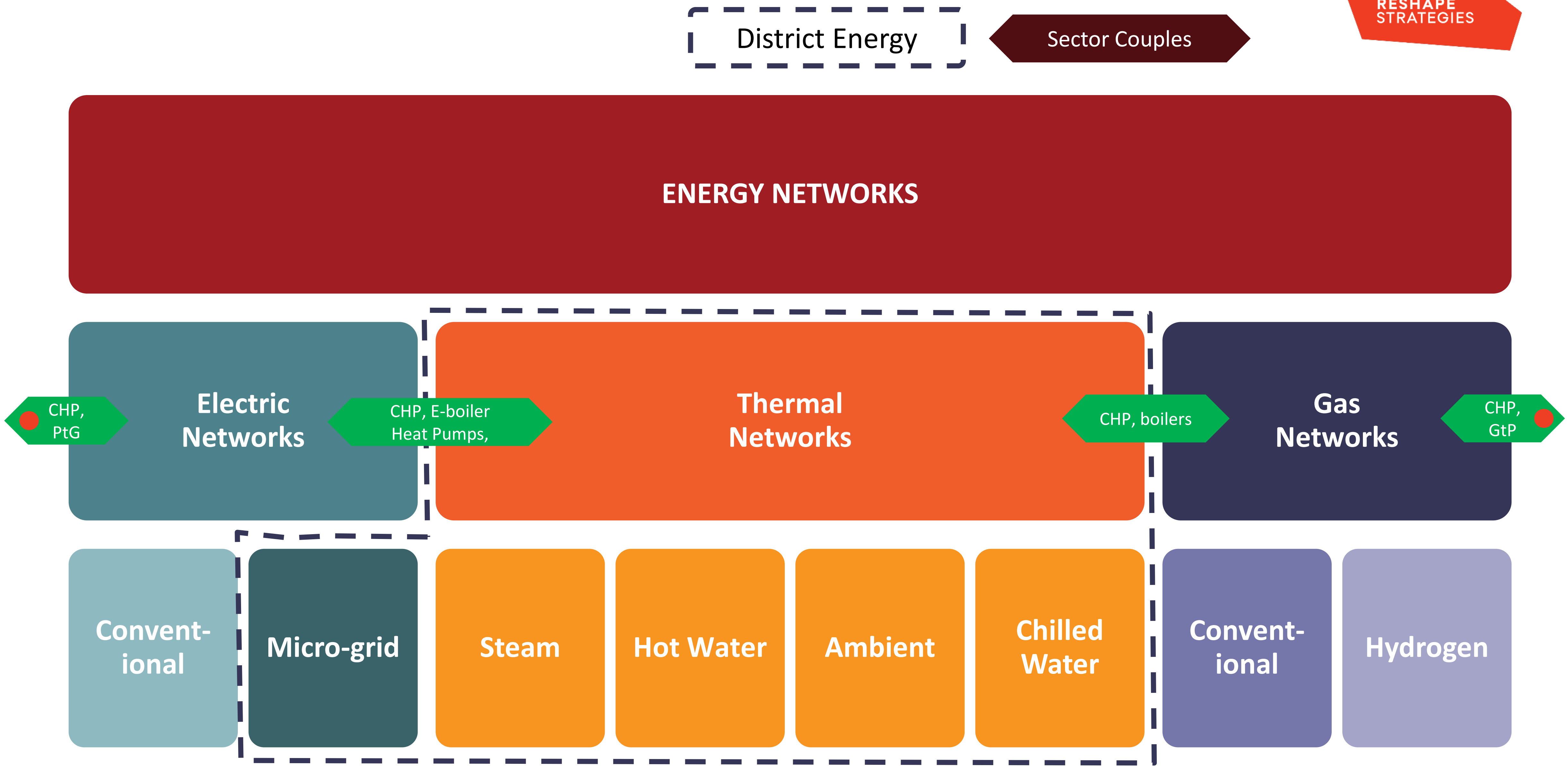
Modern hot water systems in progressive jurisdictions in early 2000's

Recent interest from electric utilities in US & Canada as a 'non-wires alternative' to mitigate peak demand constraints

Recent interest from gas utilities in US & Canada as a means to manage transition off gas in response to climate objectives

ENERGY NETWORK TAXONOMY

RESHAPE STRATEGIES

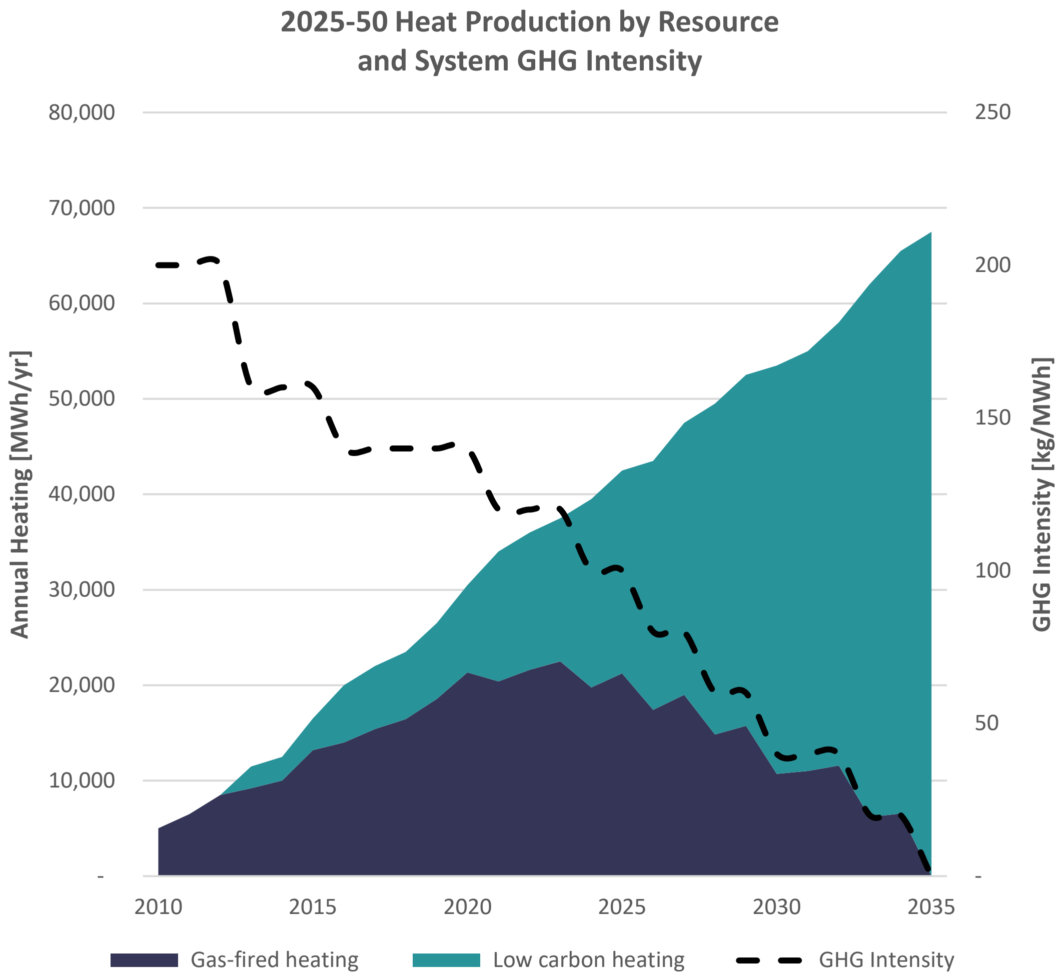


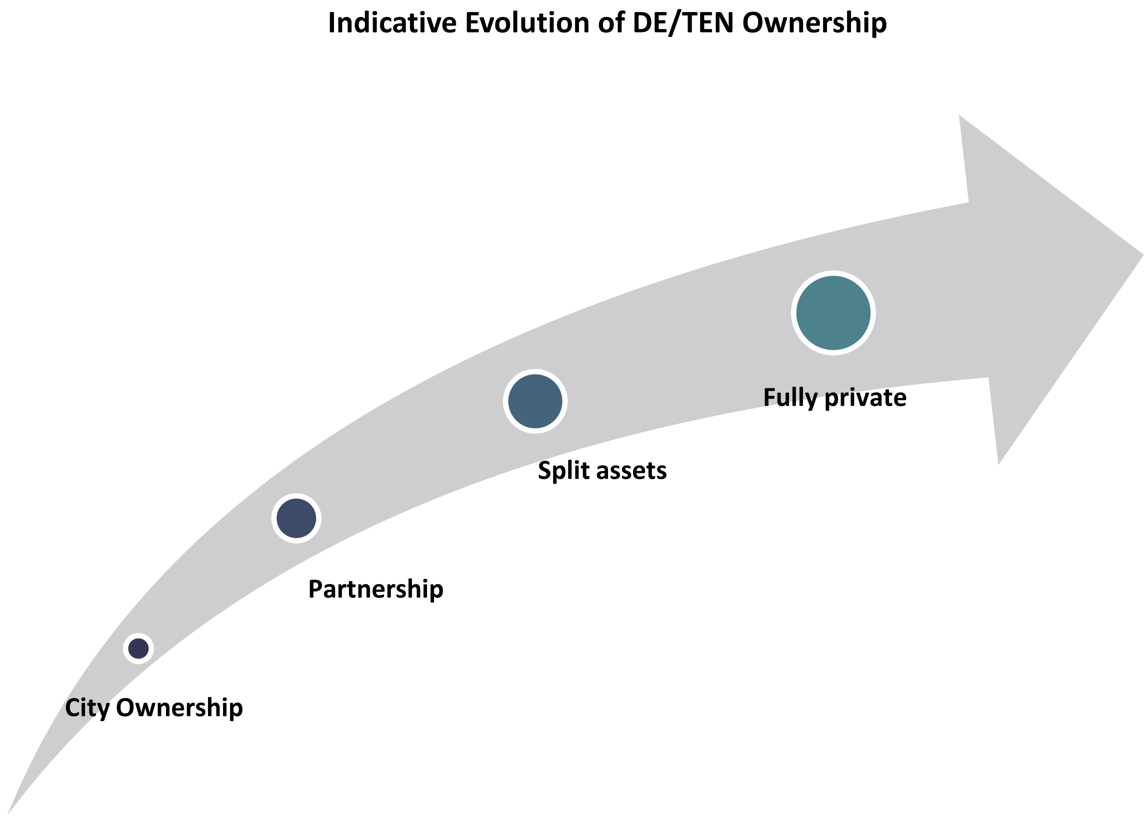
ENERGY NETWORK TAXONOMY

RESHAPE STRATEGIES

Energy Network	**Thermal Networks** (aka District, Neighbourhood, Community Energy Utility/System) TEN / DES / NEU / CES			
Energy Source	**Mix of energy sources** (waste heat, air, ground, water (multiple), solar, gas, etc.)			
Energy Carrier	**Steam**	**Hot Water**	**Ambient**	**Chilled Water**
Energy Service	**Heating** (Space heating and domestic hot water)		**Cooling**	

SYSTEMS CAN EVOLVE OVER TIME (RESOURCES AND OWNERSHIP MODEL)





REGULATION

RESHAPE STRATEGIES

Regulated Systems

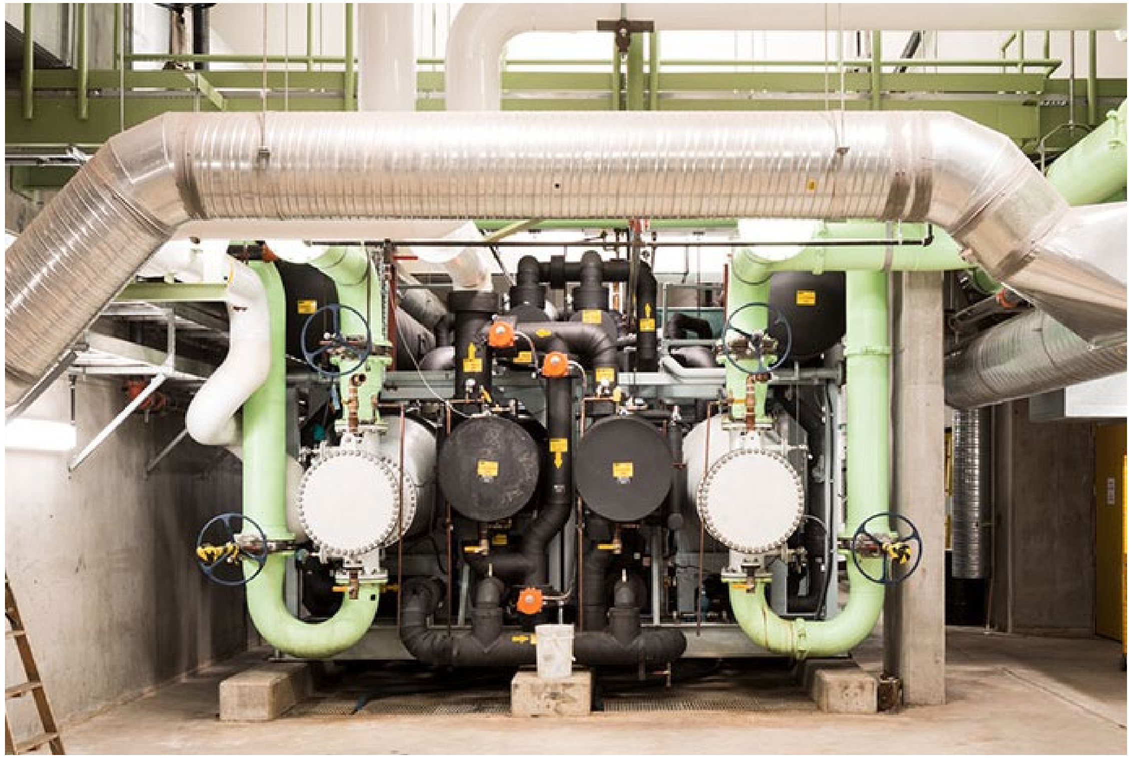
- A minority of regions regulate thermal energy
- BC is one example
  - Municipally owned systems exempt (regulated by City Council)
  - Stream A
    - Single site, < $15M CAPEX
    - Light-handed regulation, simple permit, complaints based
  - Stream B
    - Multiple sites, > $15M CAPEX
    - Set capital structure and ROE
    - Multi-staged process to obtain permits
    - Ongoing regulation, approvals for expansion and upgrades
  - Shortcomings
    - Can be onerous for level of investment
  - Benefits
    - Prudency and transparency
    - Customer protection

Un-regulated

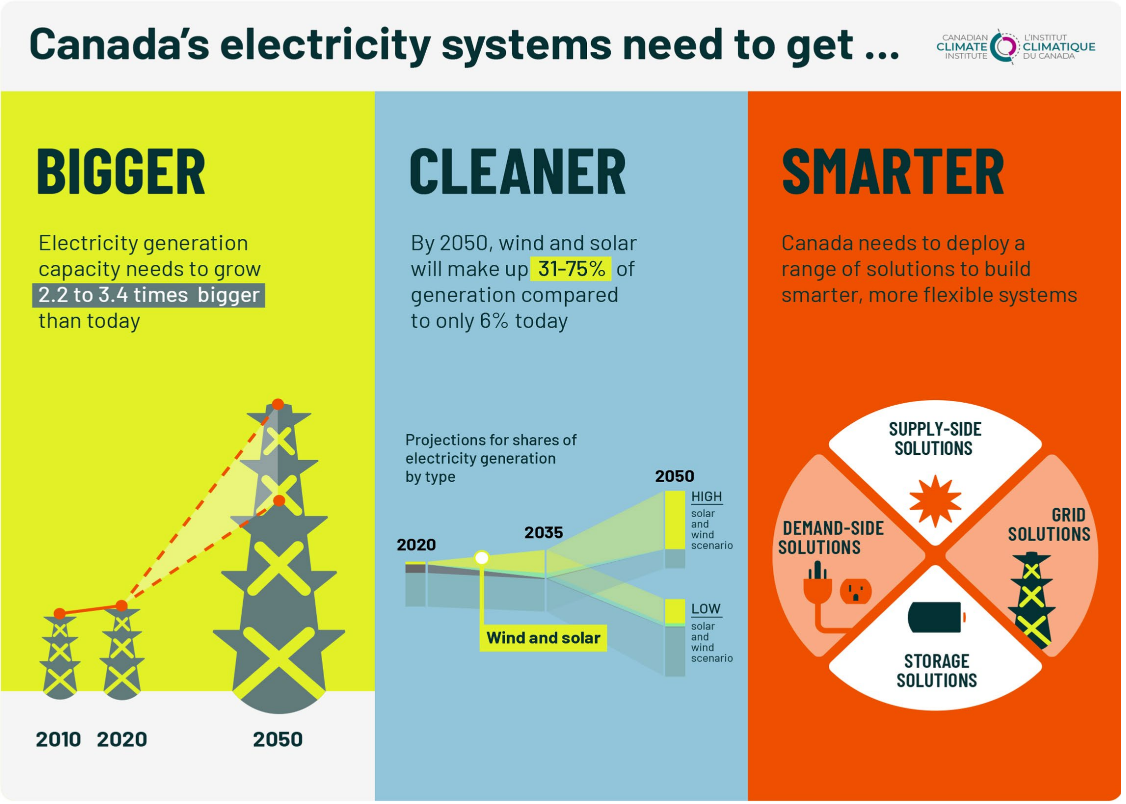
- Most regions in North America are un-regulated
- Contracts serve the function of regulation
- Shortcomings
  - Information asymmetry
  - Non-uniform rates can be an issue
  - Equity issues can arise
- Benefits
  - Expediency
  - Simplicity

ROLE OF REGULATION TO ENABLE PUBLIC BENEFITS?

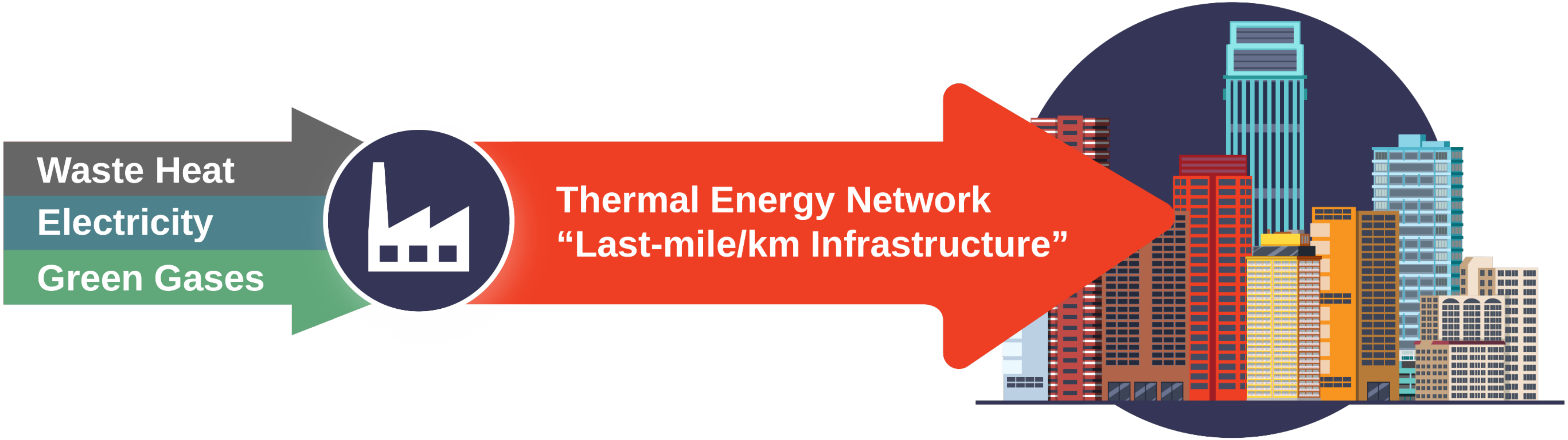
Platform for Renewables Technologies and Sources



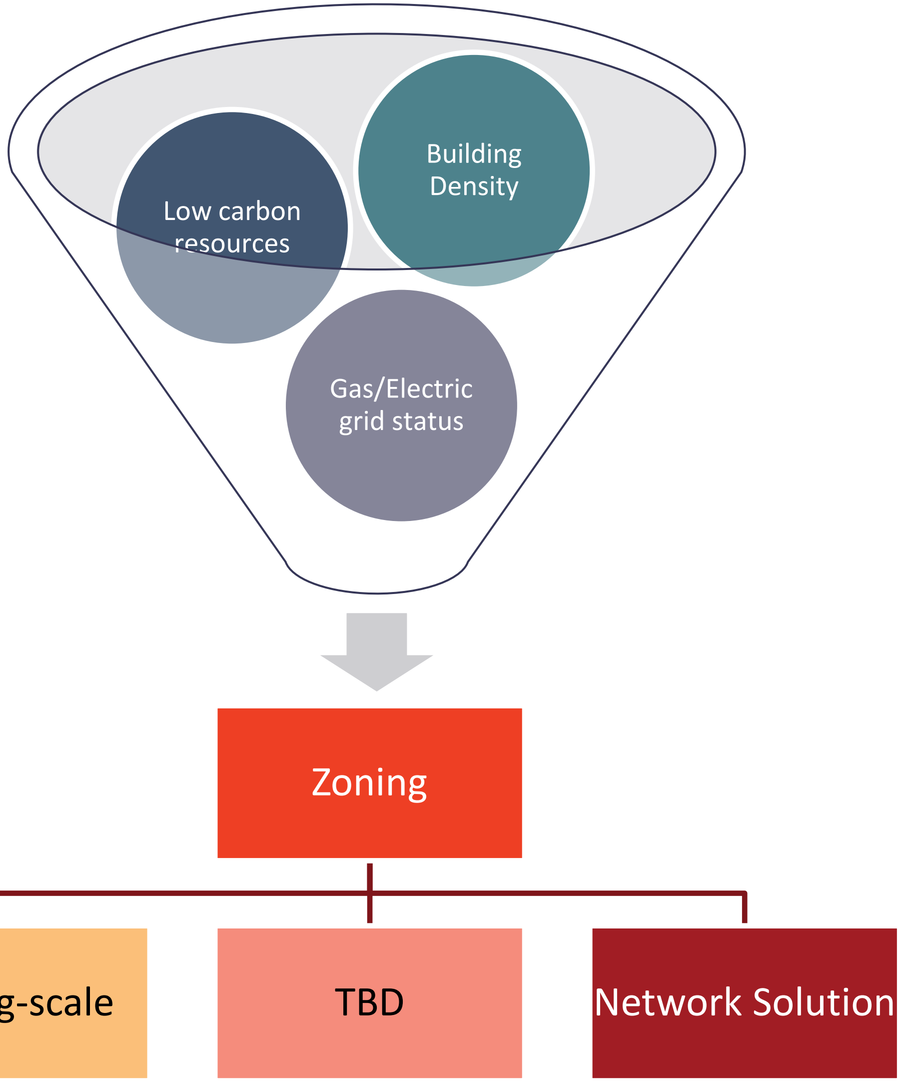
Electrical Grid Support



DE/TENS AS 'LAST-MILE INFRASTRUCTURE'



AREA-BASED THERMAL ENERGY PLANNING: CRITERIA & PROCESS

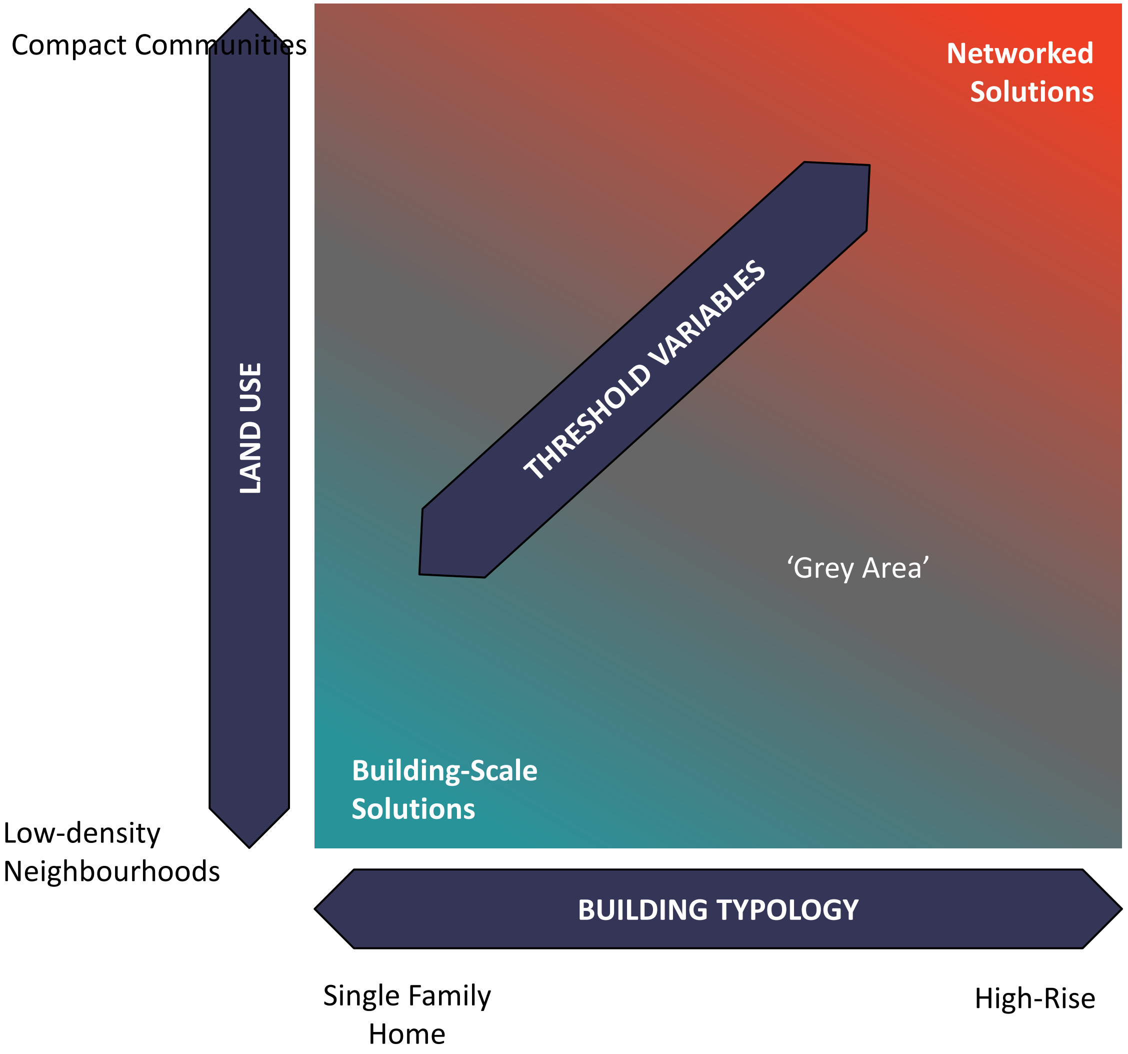


TENS ARE NOT A UNIVERSAL SOLUTION

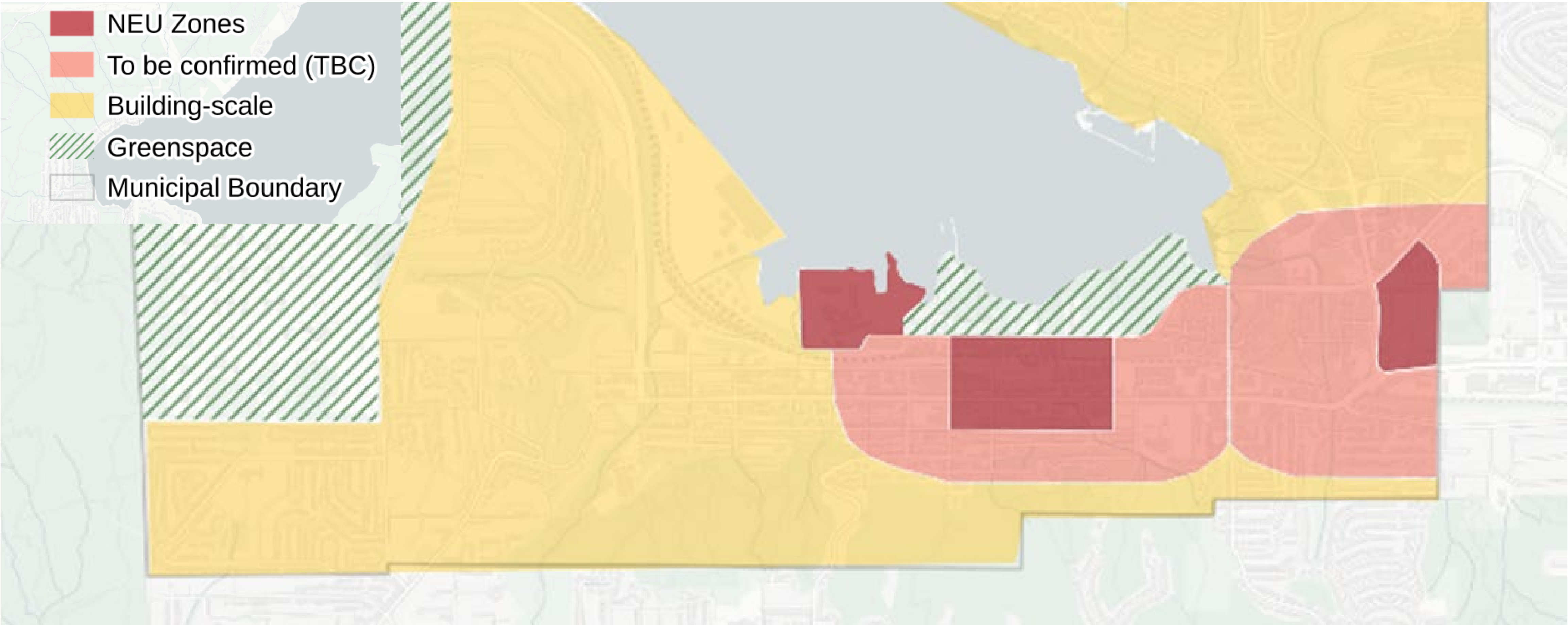
- Advantages in assessing zoning in terms of **probabilities**
  - In compact communities with high-rise buildings TENs have a higher probability of being a desired decarbonization pathway
  - In low-density neighbourhoods with single family homes, TENs have a lower probability of being a desired decarbonization pathway

- No **black-and-white rules** to defining TEN zoning. Unique circumstances exist, for example:
  - Low-density neighbourhood with single family homes with leak-prone gas pipe, costly gas and electric upgrades
  - High-rise buildings in medium density neighbourhoods, in temperate climates and low cost, low carbon, readily available power

- **Thresholds** defined by analysis of
  - Building-scale pathway v Networked pathway
  - Key variables influencing equation include
    - Thermal demand intensity
    - Availability/cost of low carbon resources
    - Considerations of gas/electric network
    - Others



AREA-BASED THERMAL ENERGY PLANNING:
STUDY OF OPTIMAL TRANSITION PATHWAY FOR A GIVEN AREA



AREA-BASED THERMAL ENERGY PLANNING: THERE ARE NO SOLUTIONS, ONLY TRADE-OFFS

RESHAPE STRATEGIES

Existing
(Building-scale, gas-fired heating)

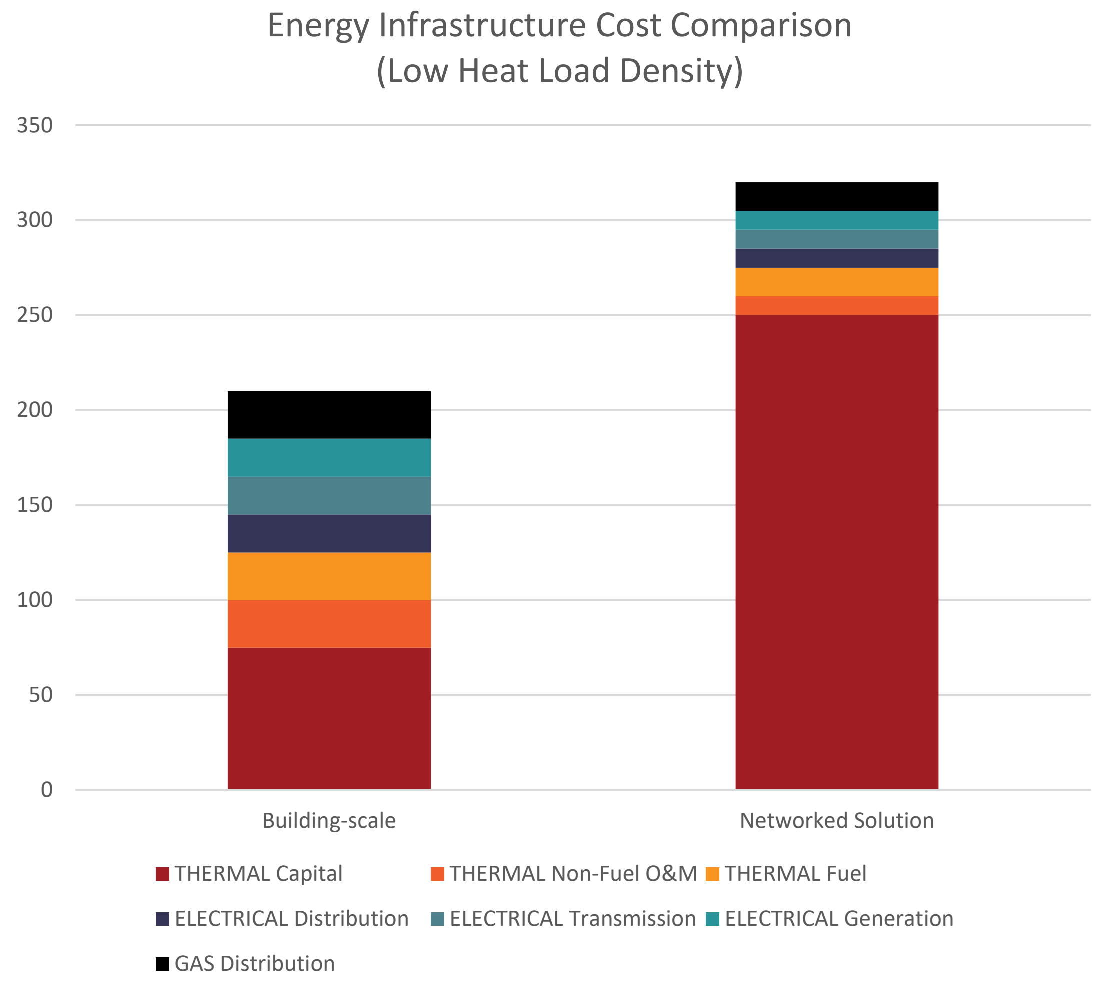
DE/TEN-Forward Pathway
(Networked and sector integrated)

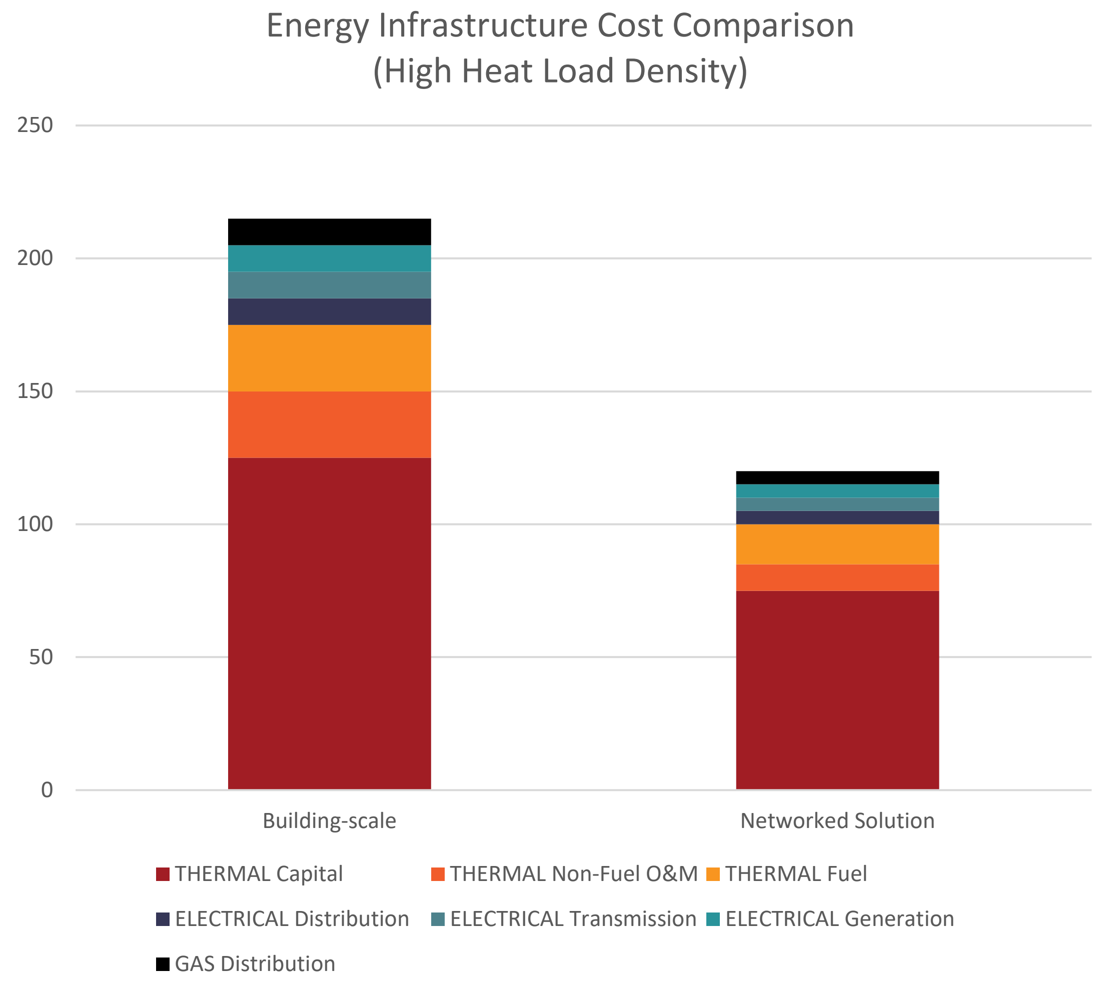
Direct-Electrification Pathway
(Building-scale electrification)

Licker Geospatial Consulting

- Thermal Energy Network (TEN)
- Electric Distribution
- Electrical Transmission
- Gas Network
- Electrical Sub Station
- Thermal Energy Center
- Building-scale plant

PATHWAYS ANALYSIS (INDICATIVE)

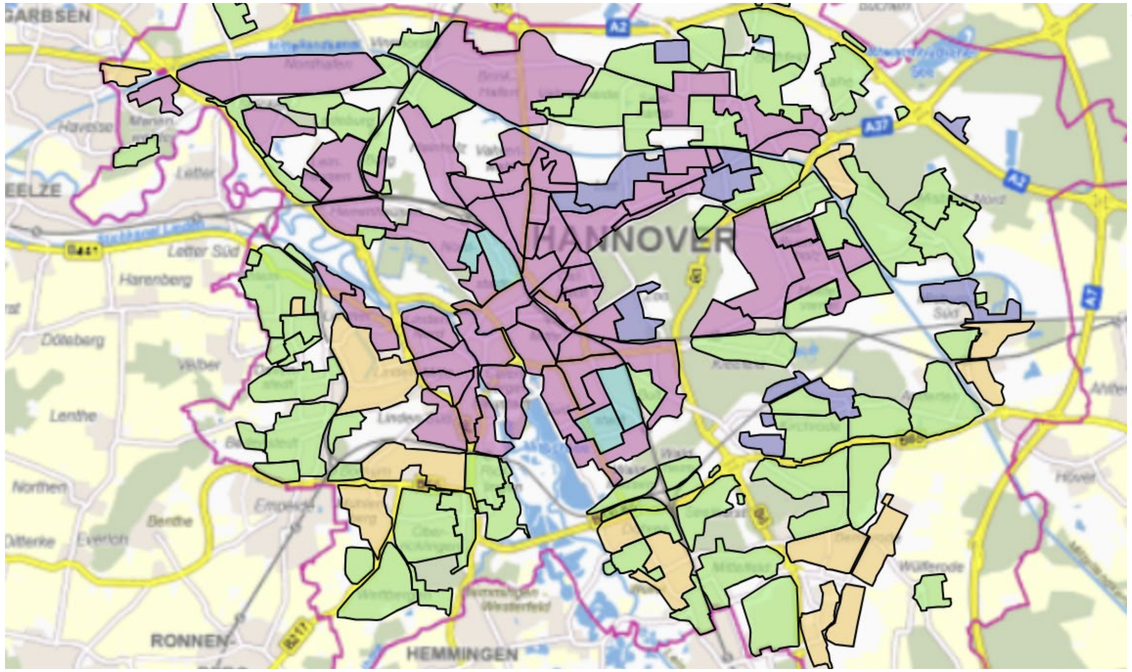




INTERNATION PRECEDENTS FOR AREA-BASED THERMAL ENERGY PLANS

RESHAPE STRATEGIES

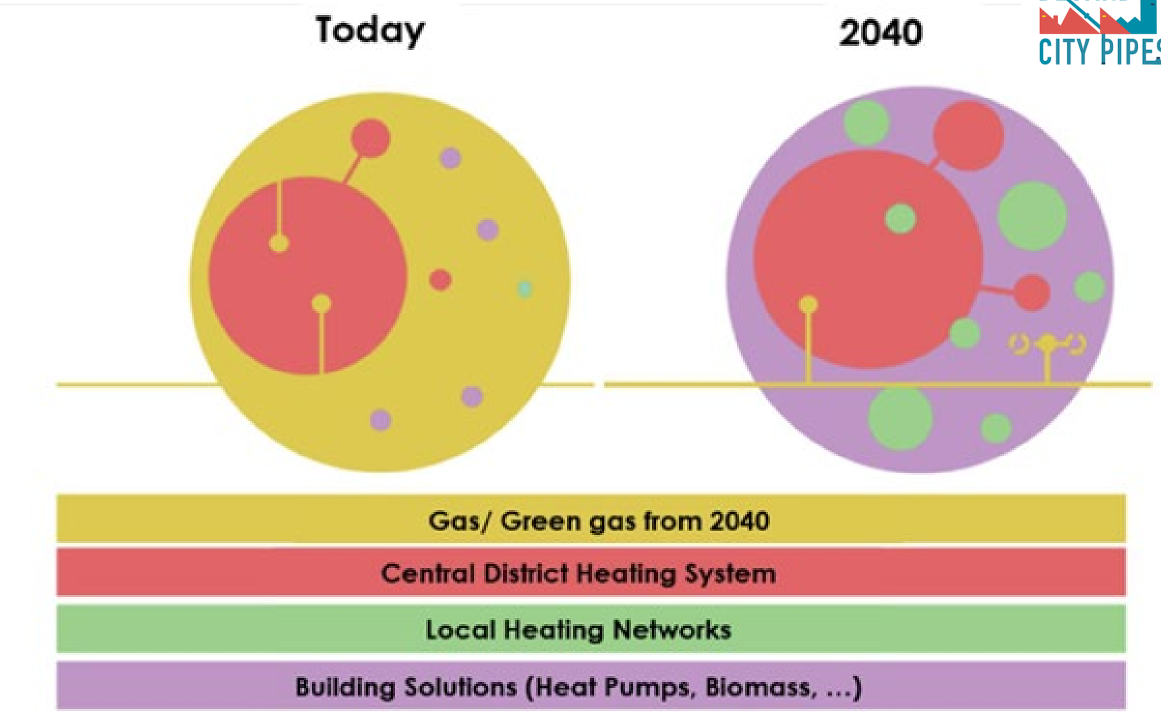
Hannover, Germany



- Existing thermal network zones
- Thermal network expansion zones
- Thermal network study areas (expansion)
- Thermal network study areas (localized)
- Decentralized heating solutions (building scale)

Image Credit: City of Hannover

Vienna, Austria



DECARB 2050 CITY PIPES

INTERNATION PRECEDENTS FOR AREA-BASED THERMAL ENERGY PLANS

RESHAPE STRATEGIES

DECARB CITY PIPES 2050

Zurich, Switzerland

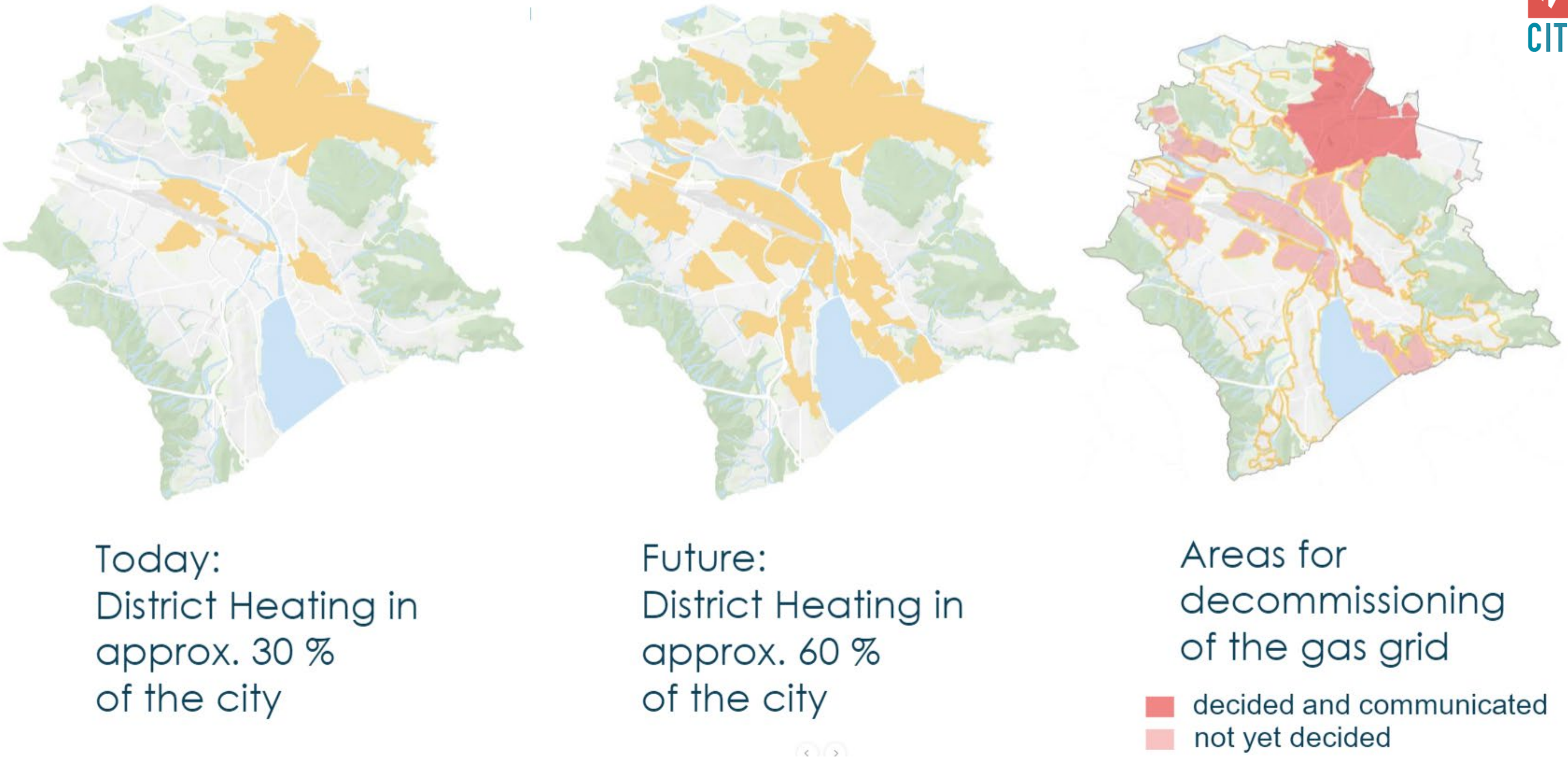
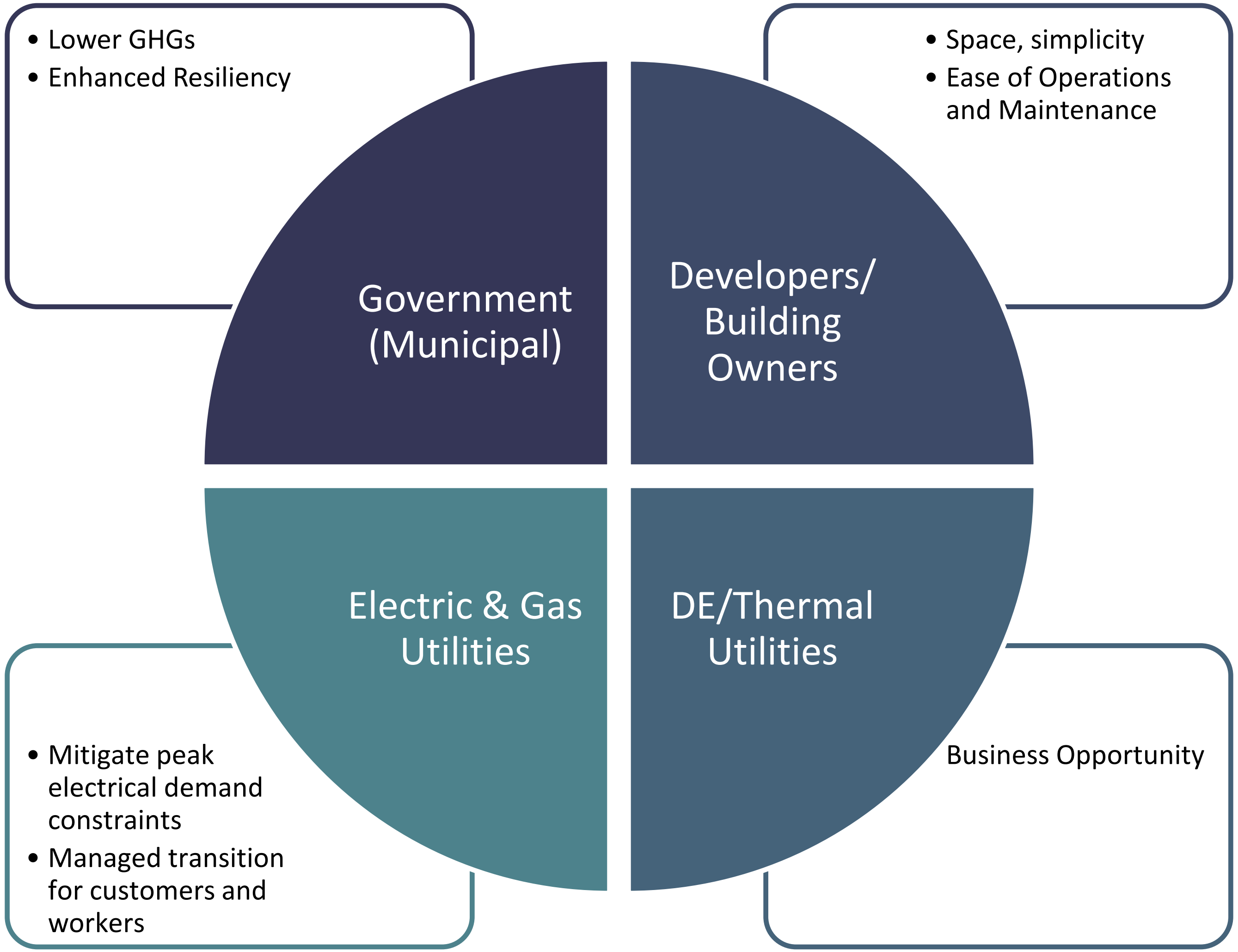


Image Credit: Decarb City Pipes

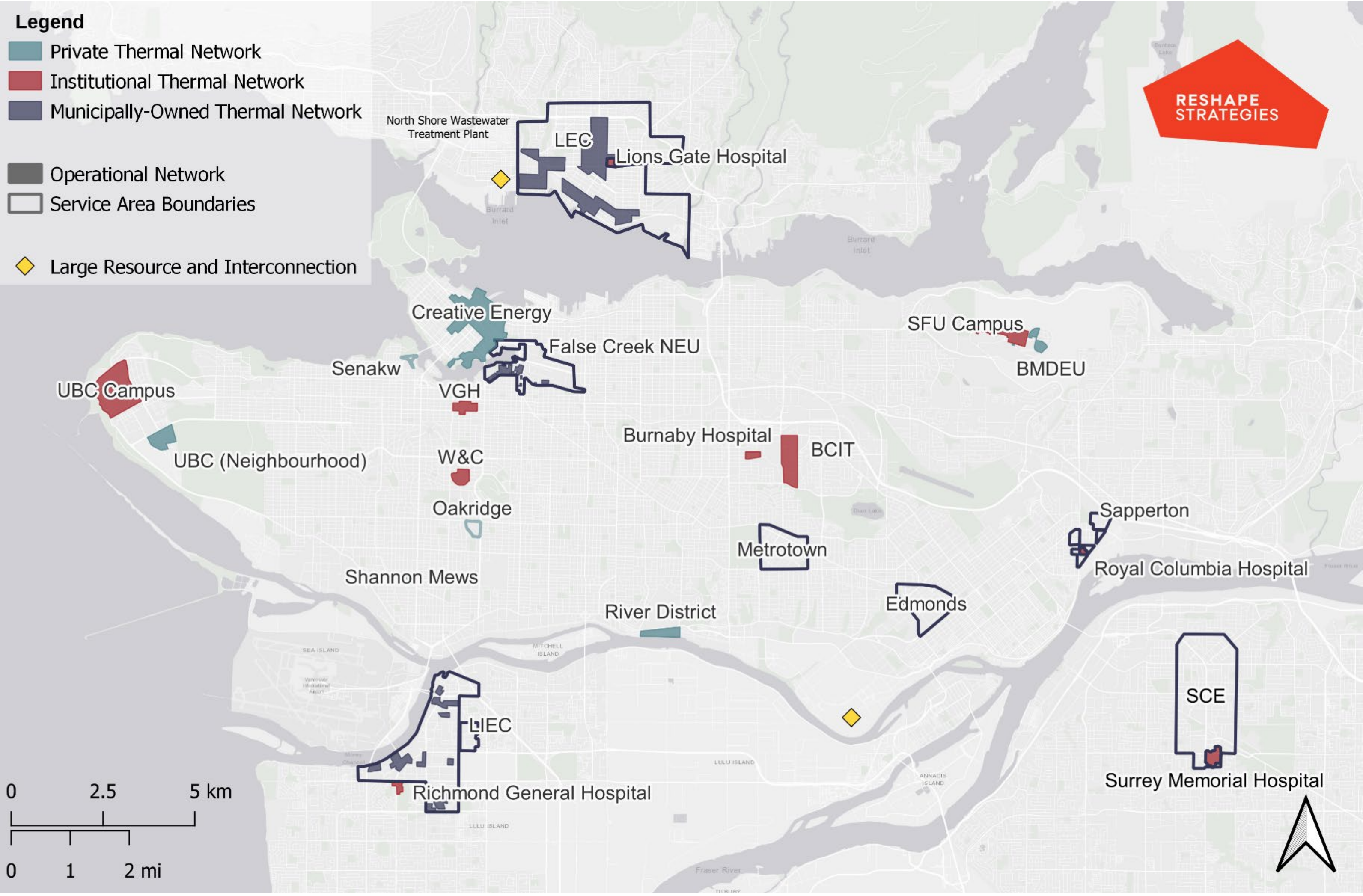
WHO BENEFITS / WHO LEADS?

RESHAPE STRATEGIES



BC LOWER MAINLAND OVERVIEW

LARGE (> 1M SF) TENS



Private TEN	Low-Carbon Technology
Creative Energy	E-Boiler (2026)
Seńáḵw	Sewer (2027)
River District	Waste-to-Energy (2027)
UBC (Neighbourhood)	Heat Recovery (pending)
Burnaby Mountain	Biomass (2018)

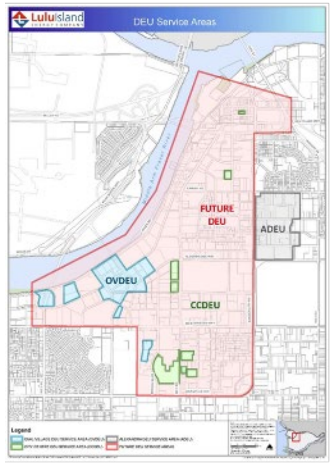
Municipally-Owned TEN	Low-Carbon Technology
Vancouver (NEU)	Sewer (2009)
Richmond (ADEU)	Geo (ambient)
Richmond (CCDEU)	Sewer (pending)
Surrey (SCE)	Sewer (2027)
North Van (LEC)	Sewer (2027)
Burnaby (Metrotown)	Waste-to-Energy (2027)
Burnaby (Edmonds)	Waste-to-Energy (2027)

Institutional TEN	Low-Carbon Technology
UBC (Academic)	Biomass (2014)
SFU (Academic)	Biomass (2018)

TENs AS MUNICIPAL INFRASTRUCTURE

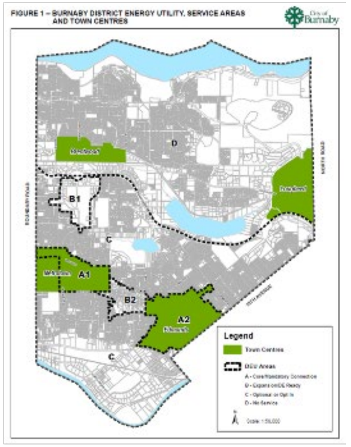
RESHAPE STRATEGIES

City of Richmond

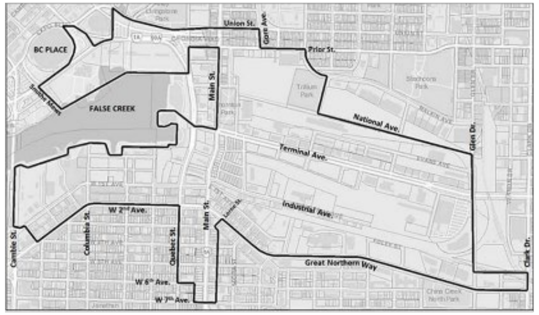


City of Surrey

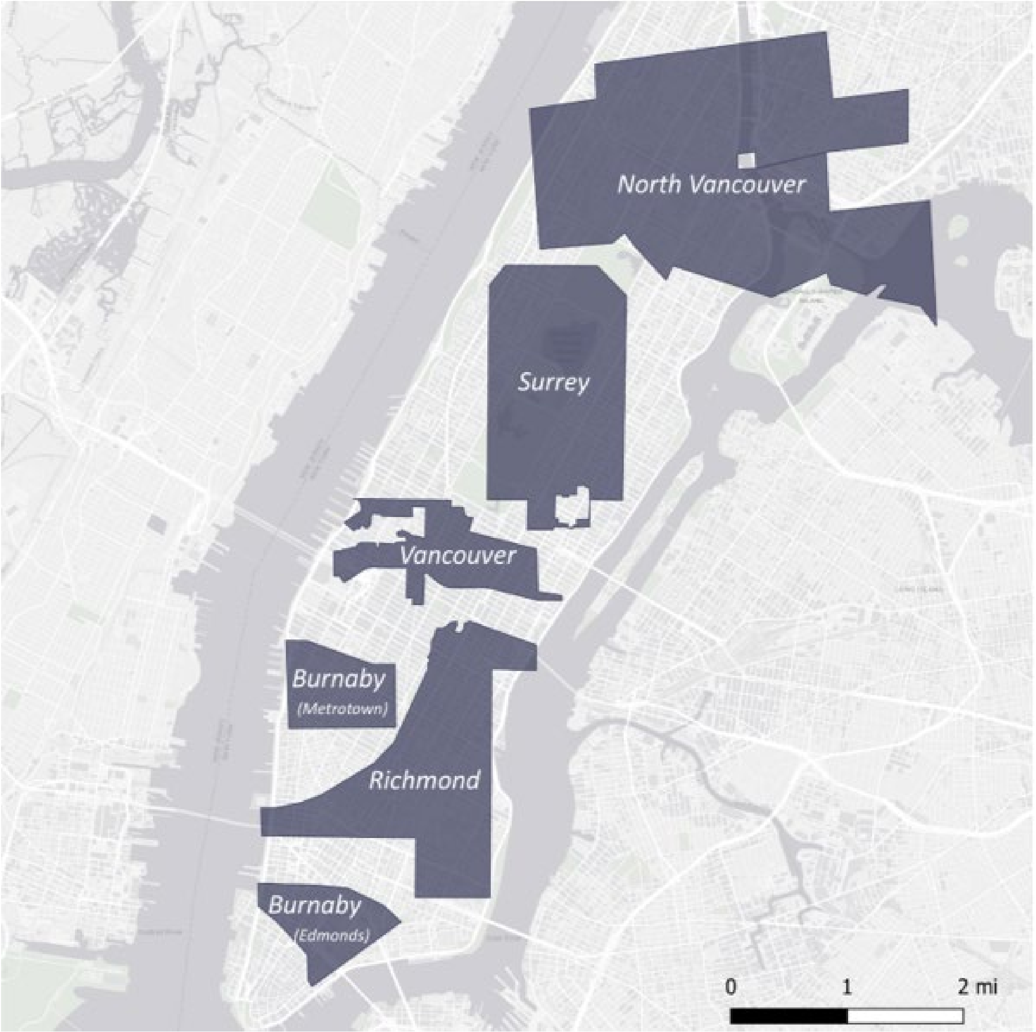
City of Burnaby



City of Vancouver
(False Creek Neighbourhood Energy Utility)



North Vancouver
(DE Service Area covers entire city)



CAUTIONARY TALE

Gibsons to decommission geo-utility serving Parkland

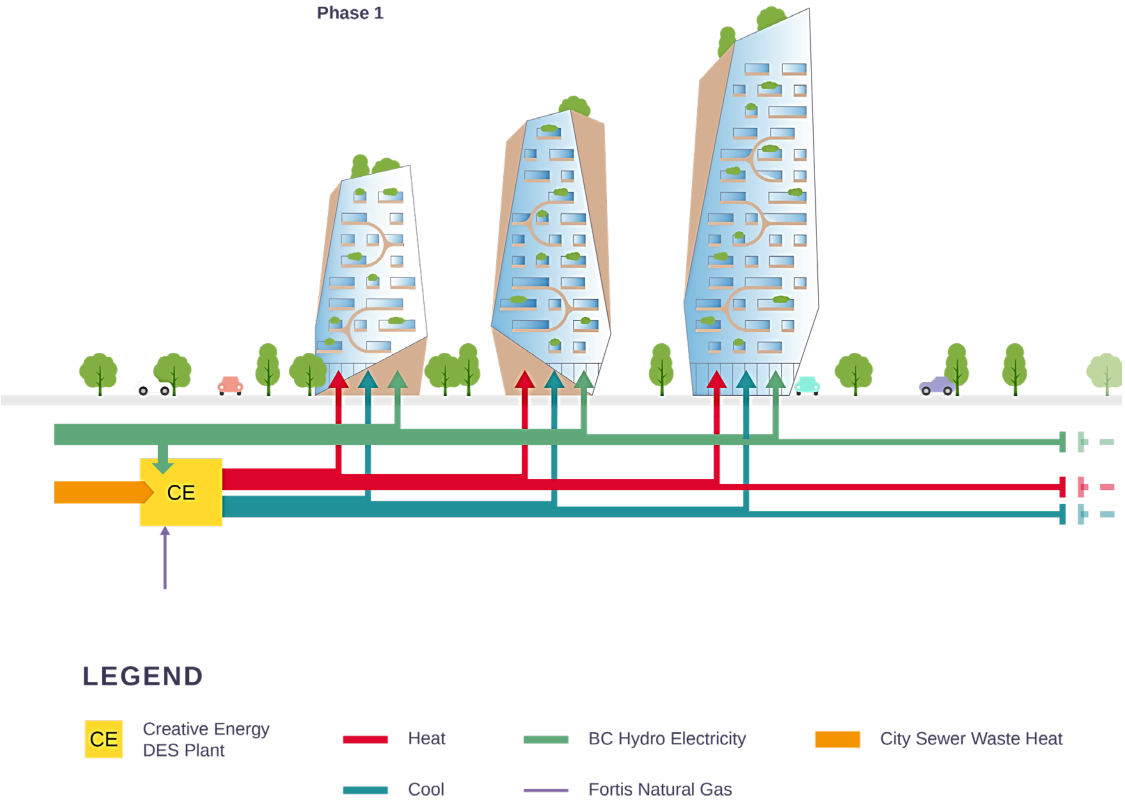
The Town of Gibsons is going to decommission the Gibsons District Energy Utility (GDEU) over the next three years.

Sean Eckford
Apr 7, 2020 2:09 PM

Crews installing the first phase of the Gibsons District Energy Utility. Council decided March 3 to decommission the system. | Island Coastal Economic Trust

- Ambient geo-exchange to single family homes
- After several years in operation, decision made by City Council to decommission the system
- Uncertainties exist over the cost effectiveness of this low carbon solution relative to other alternatives available

RESHAPE STRATEGIES



Energy Service	Equipment	Share of Annual Energy Service from equipment	GHG Intensity [kg/MWh]
Heating	Heat Pump (Sewer)	85%	5
	Electric Boiler	13%	15
	Gas Boiler	2%	185
	Blended		**10**
Cooling	Electric Chiller	100%	3
Power	BC Hydro	100%	10-25*

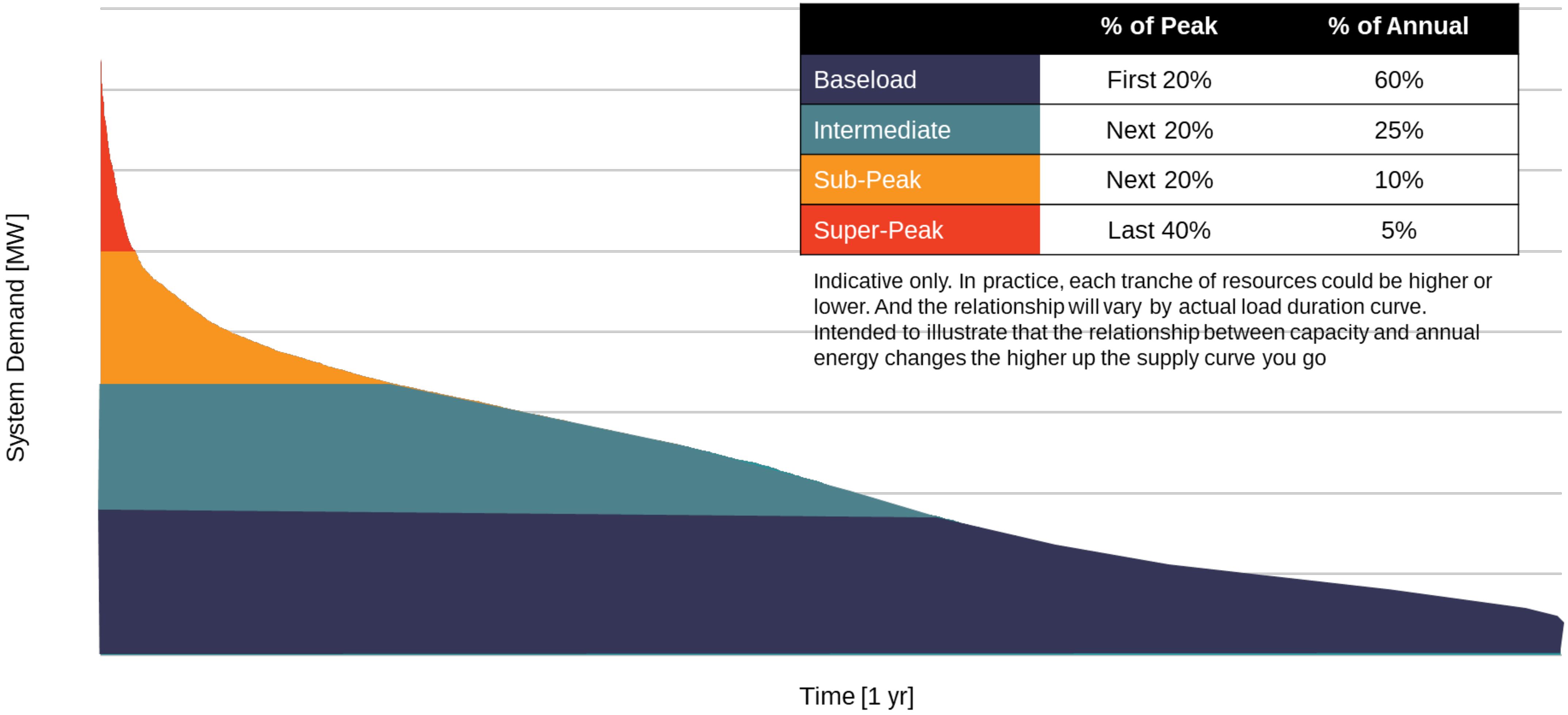
* BC Hydro GHG Intensity varies annually. It is typically in the order of 10-25 kg/MWh depending on weather, demand, import/exports of electricity, and other factors

DON’T LET PERFECT BE THE ENEMY OF THE GOOD

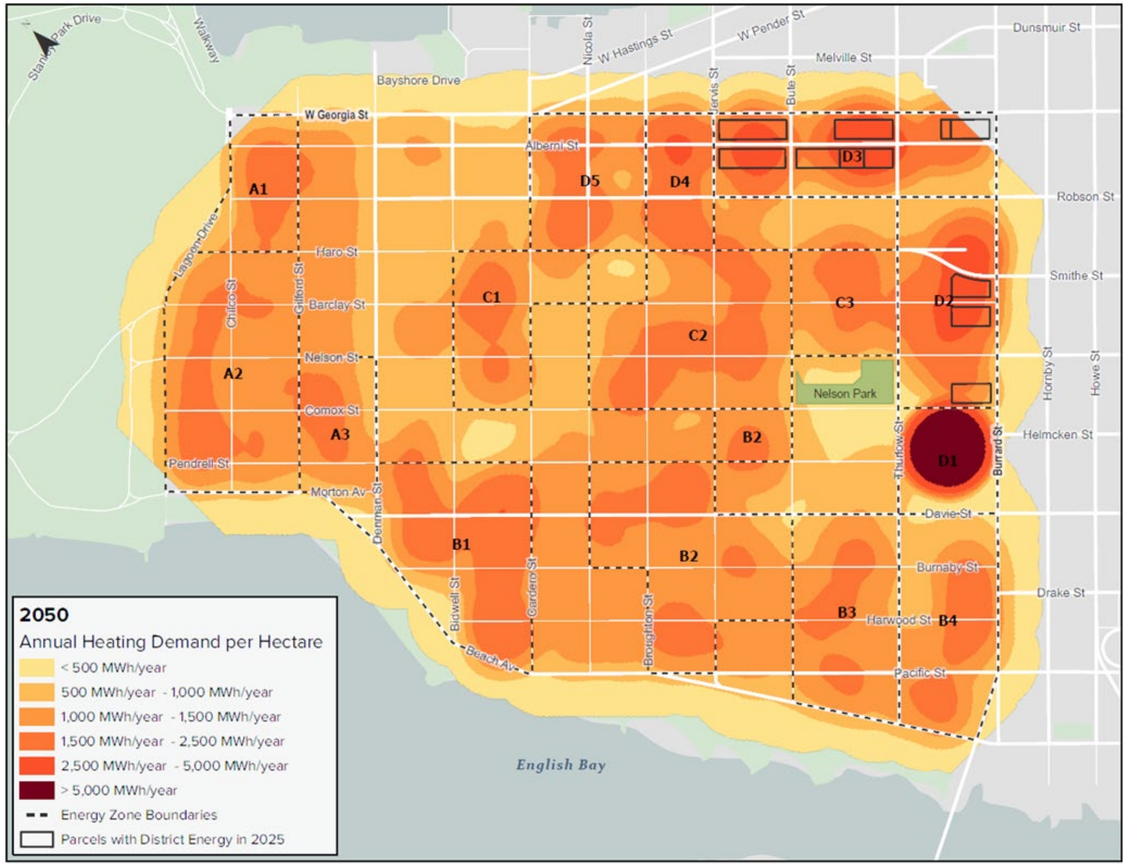
RESHAPE STRATEGIES

	% of Peak	% of Annual
Baseload	First 20%	60%
Intermediate	Next 20%	25%
Sub-Peak	Next 20%	10%
Super-Peak	Last 40%	5%

Indicative only. In practice, each tranche of resources could be higher or lower. And the relationship will vary by actual load duration curve. Intended to illustrate that the relationship between capacity and annual energy changes the higher up the supply curve you go



DECARBONIZING EXISTING NEIGHBOURHOODS
WEST END NES STUDY



LuluIsland ENERGY COMPANY

Richmond

Existing Thermal Energy Networks City of Richmond, BC Canada

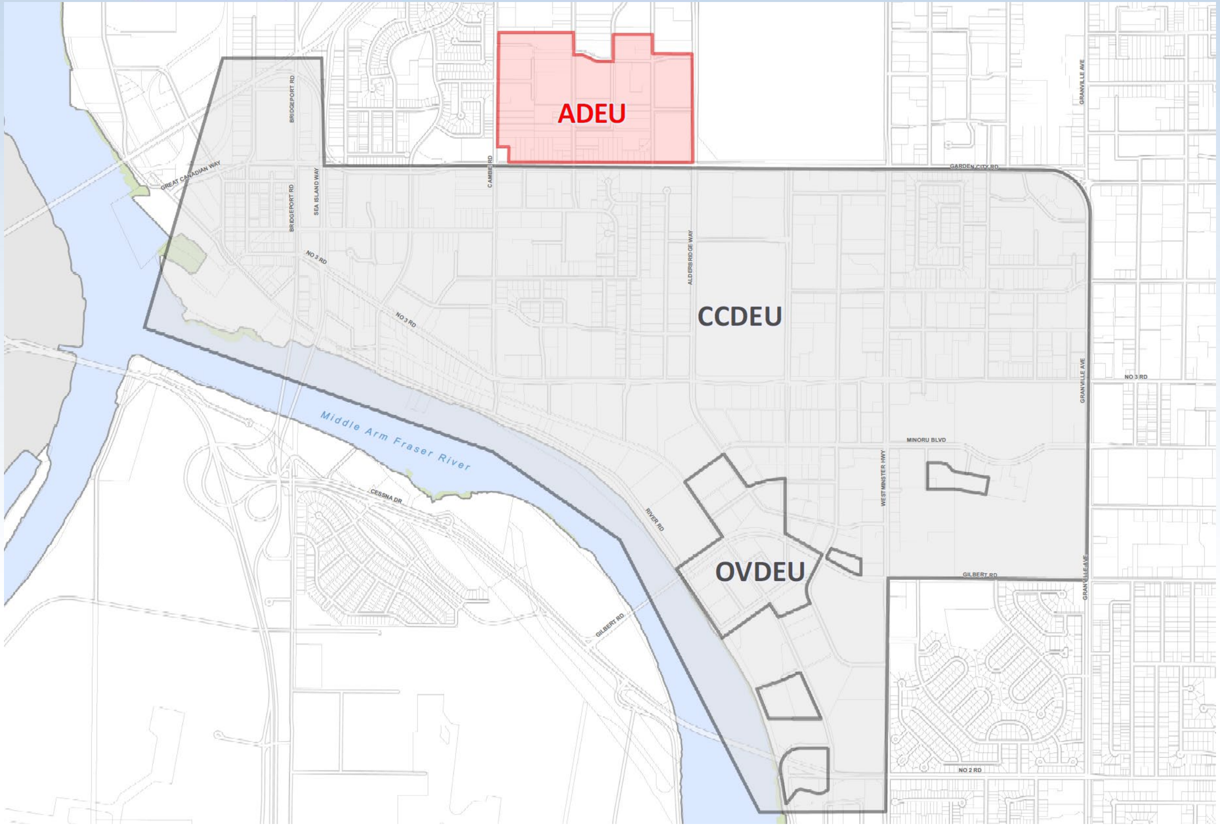
New York State DPS
Technical Conference
March 25, 2025

Presented By:
Alen Postolka, P.Eng
Chief Operating Officer

Richmond, BC Canada

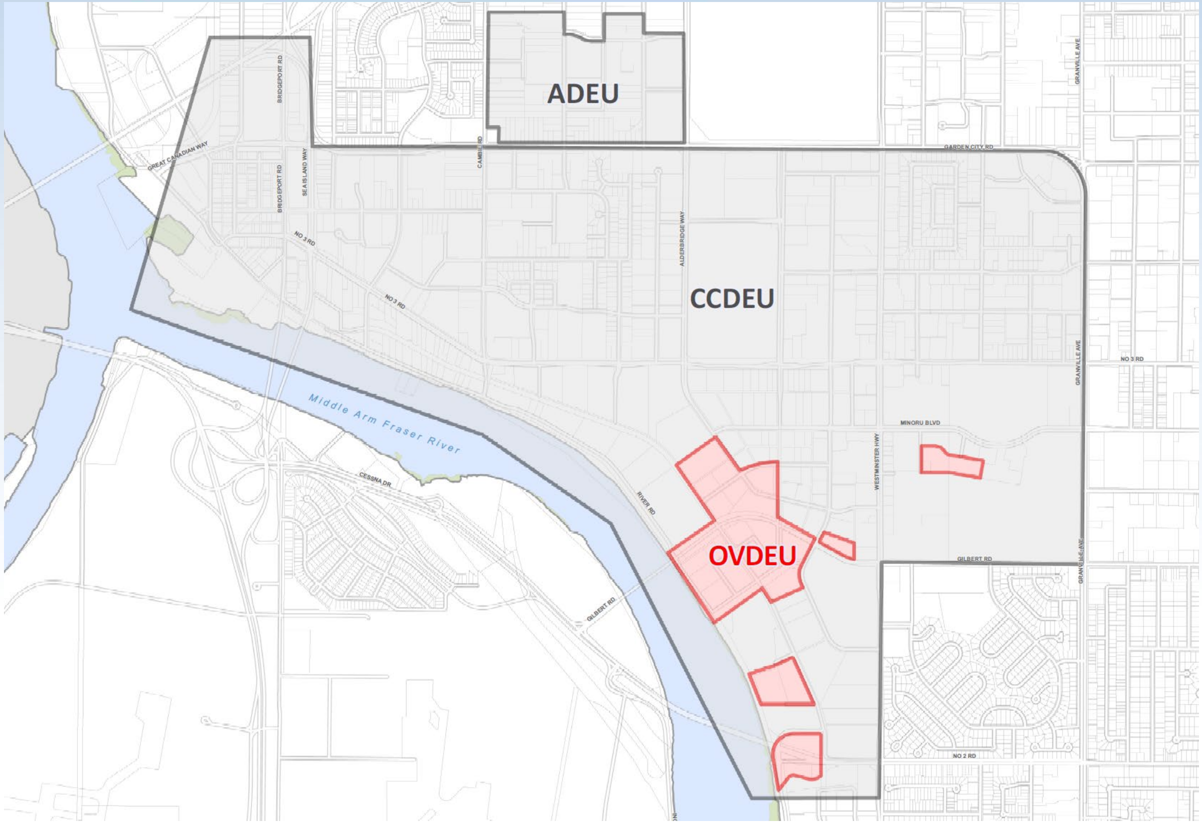
OPERATING DISTRICT ENERGY IN RICHMOND SINCE 2012

Service Areas – ADEU



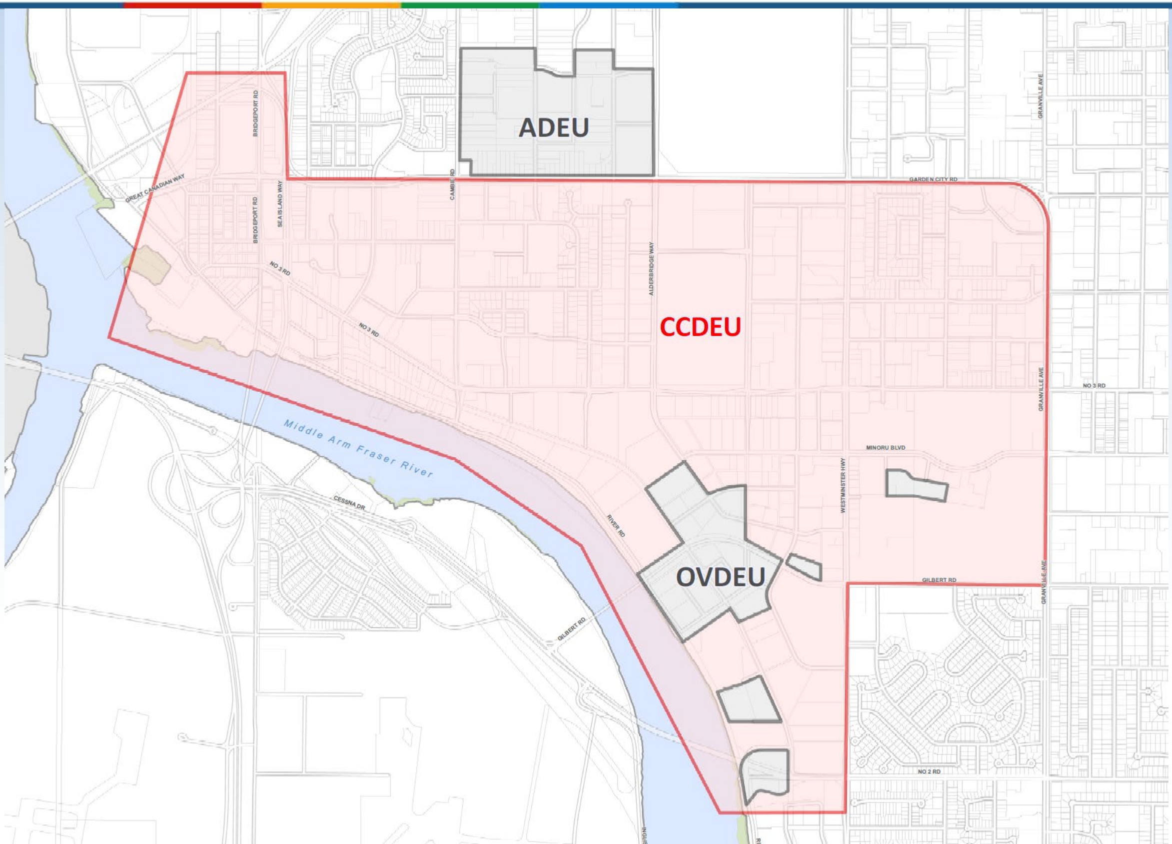
- **System Type:** Ambient Temperature
- **Technology:** Geo-exchange, Air Source Heat Pumps
- **Services:** Heating, domestic hot water (DHW), and cooling
- **Buildings Connected:** 14 buildings
- **Buildings Under Construction:** 1 building
- **Current Floor Area:** 2.4 million sq. ft.
- **Heating Capacity**: 5.8MW (19,790MBH)
- **Cooling Capacity**: 7.6MW (2,160ton)

Service Areas – OVDEU



- **System Type:** Medium Temperature
- **Technology:** Natural gas boilers, Sewer Waste Heat Recovery
- **Services:** Space heating and domestic how water (DHW)
- **Buildings Connected:** 14 buildings
- **Buildings Under Construction:** 4 buildings
- **Current Floor Area:** 3.7 million sq. ft.
- **Heating Capacity**: 19.6MW (66,878MBH)

Service Areas – CCDEU



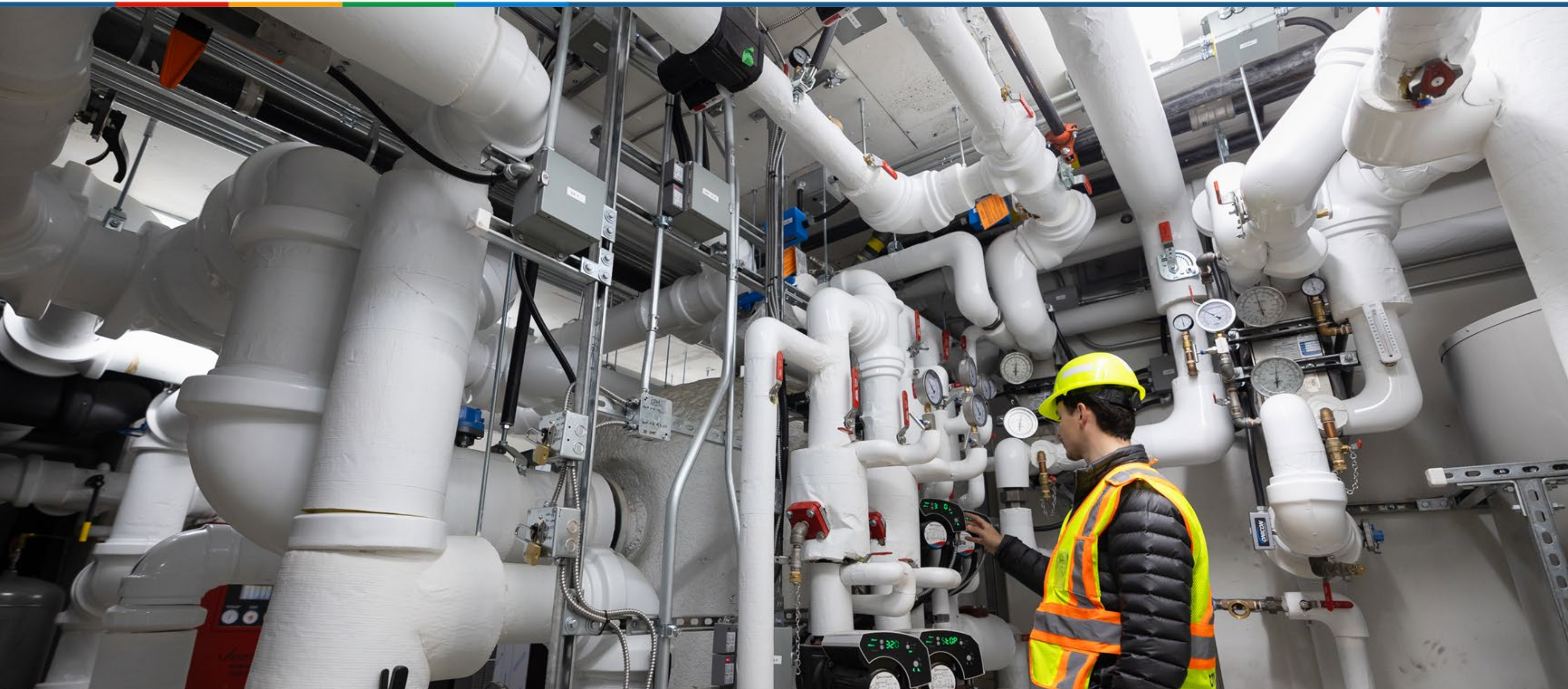
- **System Type:** Medium Temperature
- **Technology:** Natural gas boilers, Sewer Waste Heat Recovery, Air Source Heat Pumps, Cooling Waste Heat Recovery
- **Services:** Heating, domestic hot water (DHW), and cooling
- **Buildings Connected:** 4 buildings
- **Buildings Under Construction:** 16 buildings
- **Current Floor Area:** 2.7 million sq. ft.
- **Heating Capacity**: 16.9MW (57,665MBH)
- **Cooling Capacity**: 8.0MW (2,270ton)

Governance Model

Delivery Models

Customer Rates

Business Case



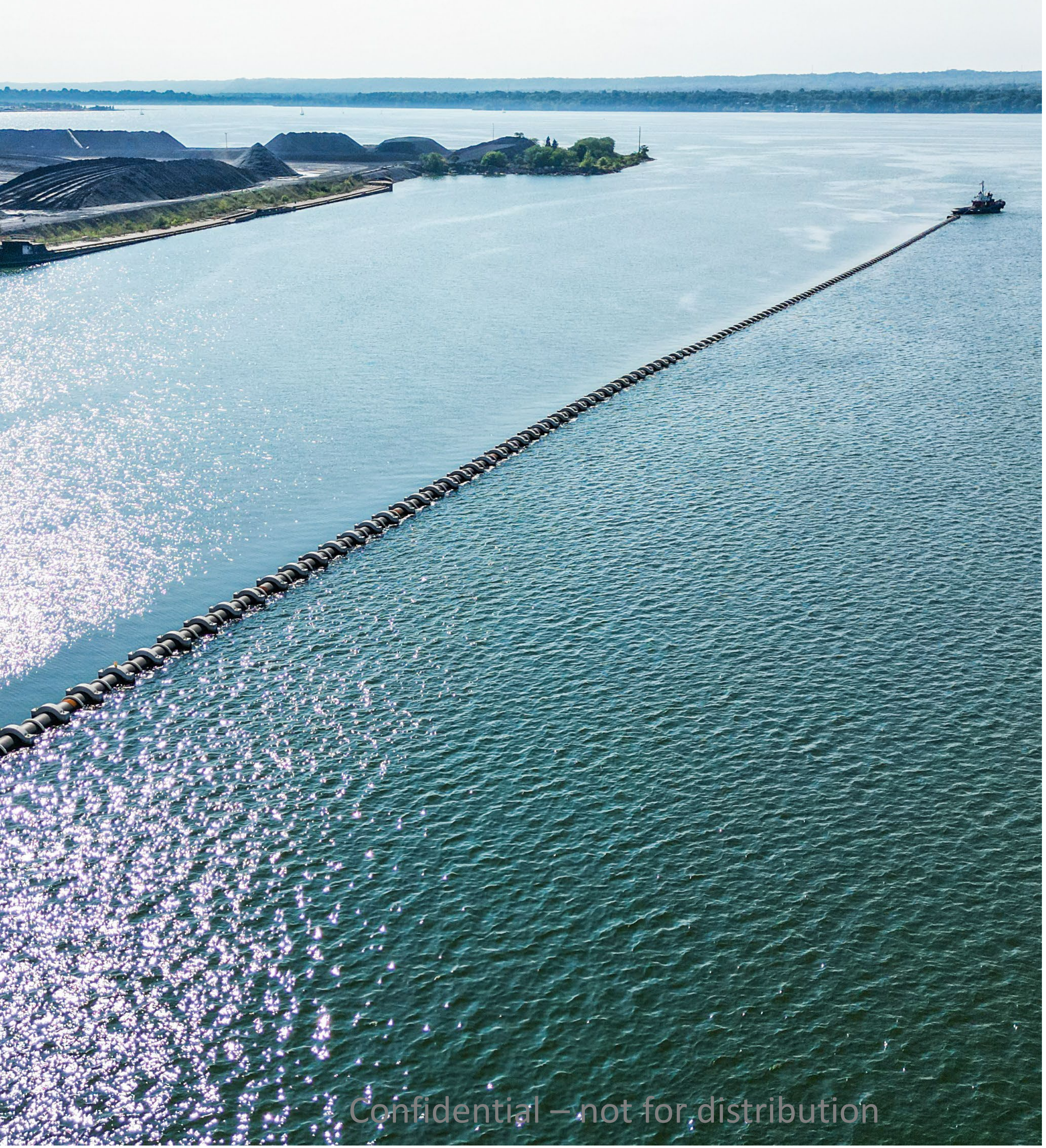
Municipal Tools

Thank You

NY-DPS TENs Conference

Lessons learned in the Planning, Development and Growth of District Energy Systems

March, 2025


Confidential – not for distribution

Enwave Background

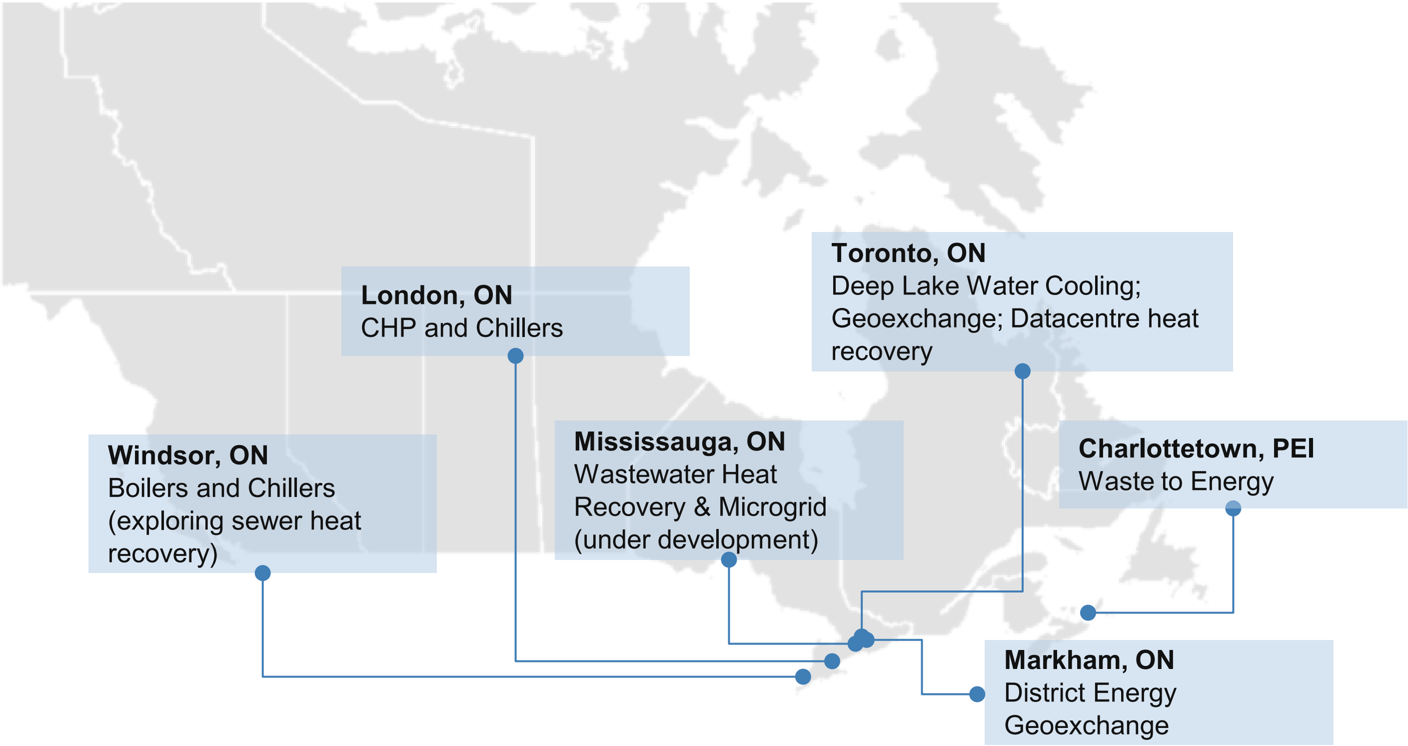
Evolution of Enwave

1969 — 1997 — 2012 — 2021

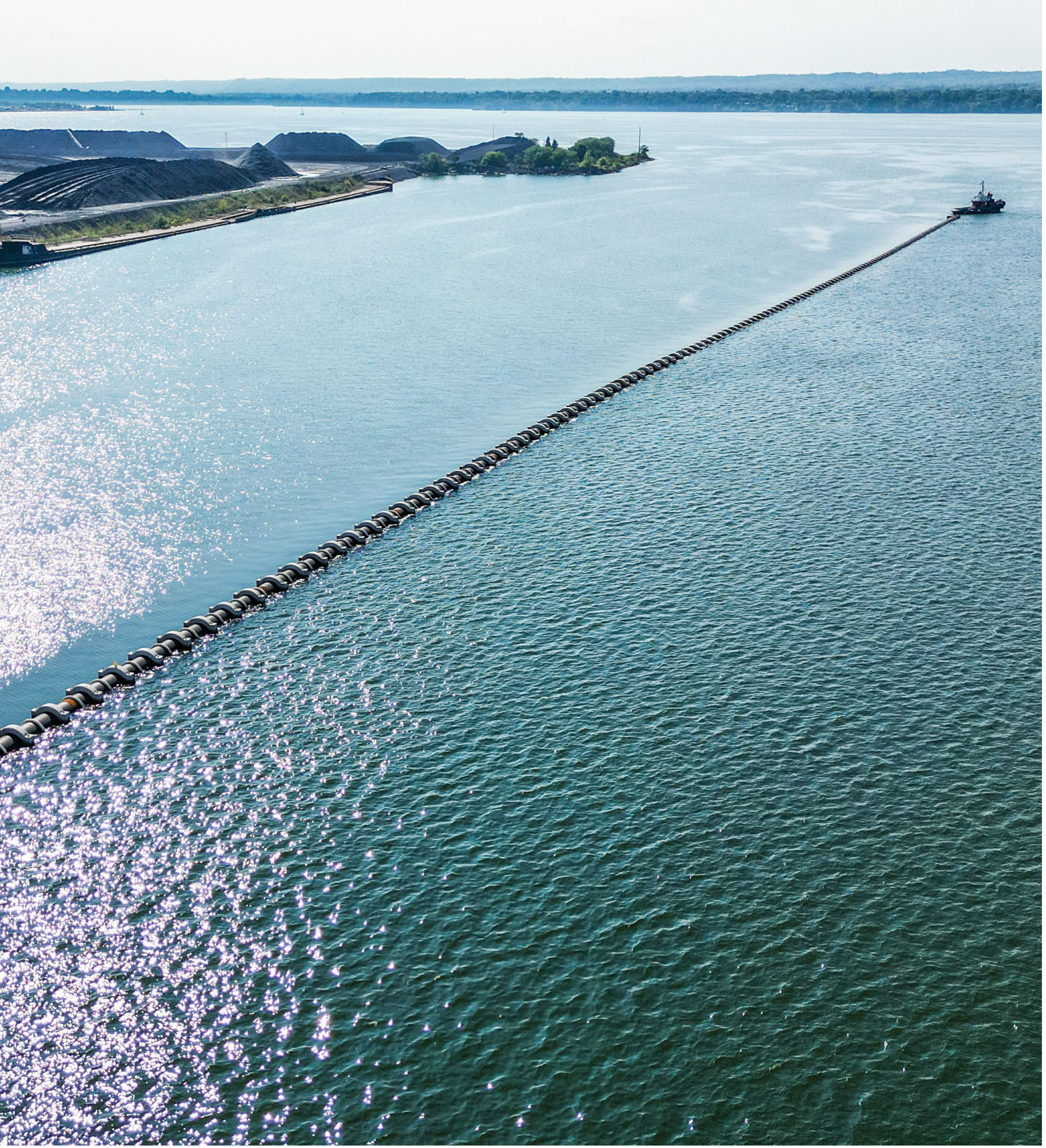
	Toronto District Heating Company	Enwave (1.0)	Enwave (2.0)	Enwave (3.0)
Ownership	Toronto (Public)	Toronto, OMERS (Public – Private)	Brookfield (Private)	Ontario Teachers' Pension Plan, ifm investors (Private)
Growth Phase	**Amalgamation** • Formed through the amalgamation of 3 steam systems	**Development** • Public-private partnership • Facilitated Enwave's creation and development of Deep Lake Water Cooling	**Scale + Commercialization** • Commercialization of the utility • Acquired 12 different systems • Industry leader • Created platform for growth	**Leverage + Decarbonization** • Environmental commitments • Global focus • Perpetual and patient sponsors • Attractive cost of capital
Energy Services Provided	Steam	Steam Chilled Water (DLWC)	Steam Chilled Water Hot Water CHP	Steam Chilled Water Hot Water CHP Green Heat

Enwave Today…

Enwave owns and operates district energy systems across Canada; our extensive operational expertise with leading edge technologies and in-house development capabilities make us a trusted partner of public and private customers

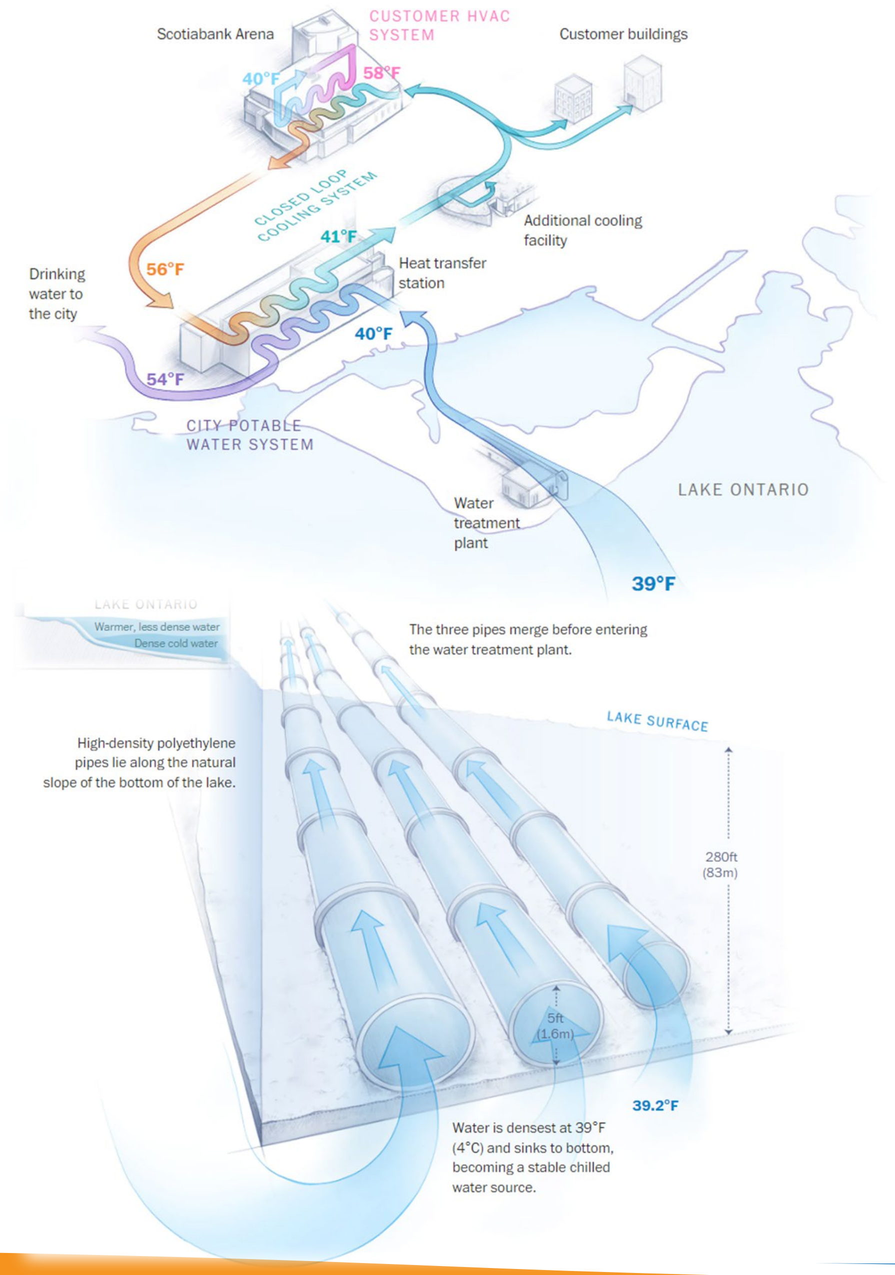


- Serving over **420 customers** including universities, hospitals, shopping centers, hotels and commercial buildings
- **150 district energy professionals**, including highly qualified development team to support customer growth and sustainability ambitions
- Leading **innovator** in sustainable district energy, automation, deployment and integration of new technologies



Spotlight on Key Projects & Innovations

PROJECT SPOTLIGHT: DEEP LAKE WATER COOLING (DLWC)



The DLWC system was originally developed through a partnership with Enwave and the City of Toronto

Last summer, we completed the construction of the 4th intake pipe in the lake to expand the **capacity of the system by 33%.**

PROJECT IMPACT:

- **66k Tons** of Cooling Capacity
- **Electrical use reduced by 90%** over chillers
- Emissions reduced by **130,000 tonnes CO2e** over the last 20 years
- **Reduction of 220 million gallons** of water use annually
- **Avoids 60MW** of peak grid electricity
- **>100 buildings** in Toronto's downtown core are already connected to the DLWC system; **4th Intake enables connection of ~40 more commercial towers**

PROJECT SPOTLIGHT: THE WELL THERMAL STORAGE

The Well is a **mixed-use residential**, commercial, and retail development led by RioCan REIT and Allied Properties REIT, located in downtown Toronto

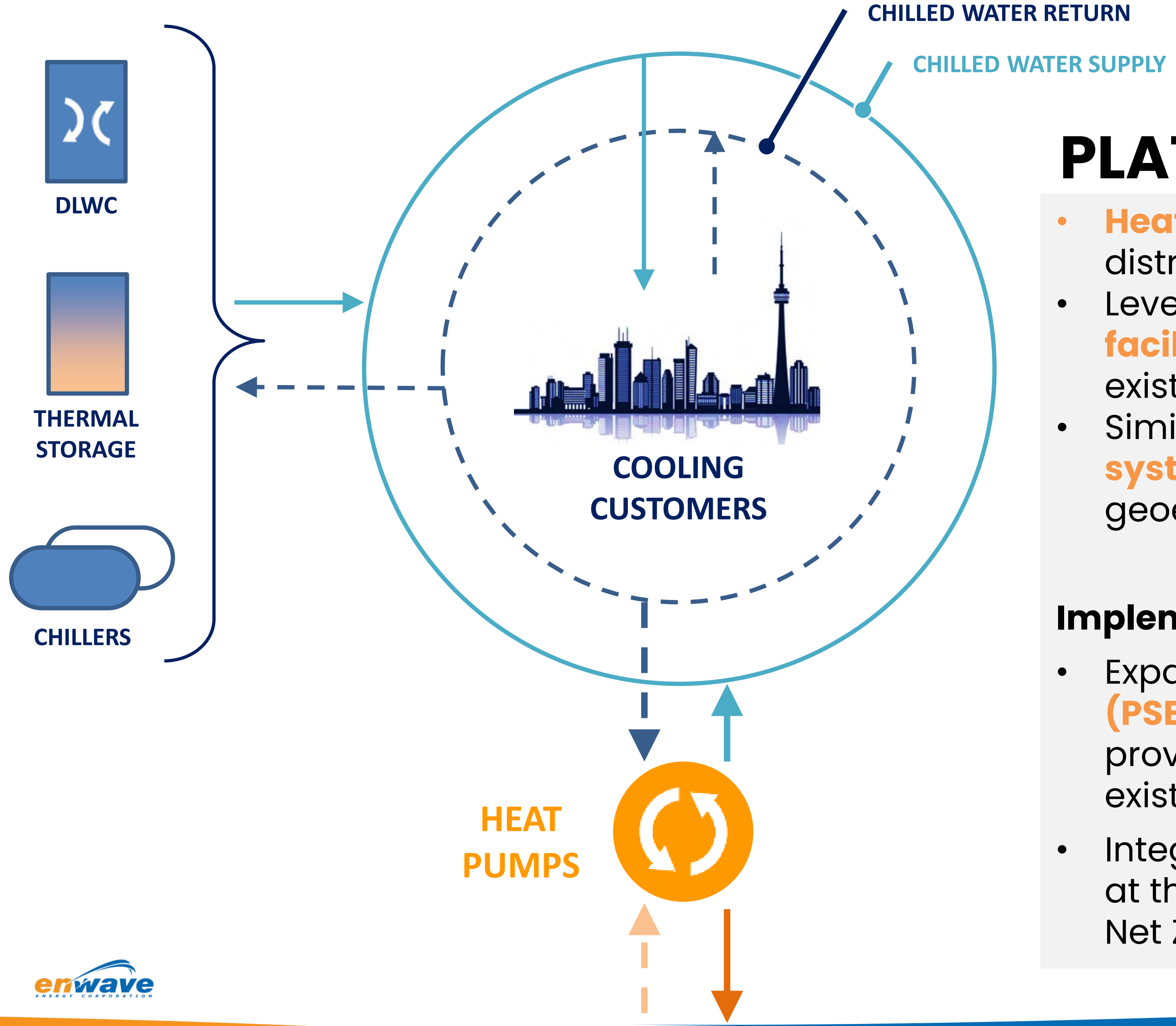
Innovative partnership and long-term lease structure with the building owners.

The Well has been lauded as an industry-leading project with long-term value for the City of Toronto and its growing communities

PROJECT HIGHLIGHTS:

- **2-Million-gallon underground tanks**, constructed below the P6 level of the development
- Provides **both heating & cooling** capacity – cooling in the summer, and heating in the winter
- Provides **8,500 tons of peak cooling** capacity in the summer, and **150,000 MBH of peak heating** capacity in the winter
- **Over 8.5MW** of demand reduction to the grid

PLATFORM SPOTLIGHT: ENWAVE GREEN HEAT



PLATFORM OVERVIEW:

- **Heat Pumps upgrade waste heat** from our district to produce low carbon hot water
- Leverages our **existing infrastructure to facilitate Energy sharing** through our existing thermal energy network in real time
- Similar concept to a **5th Generation DE system** (ambient loop or networked geoexchange systems)

Implementation Examples:

- Expansion of **Pearl Street Energy Centre (PSEC) into a 3-storey Low-carbon Facility** providing low-carbon hot water through our existing districts

- Integration of district connected heat pumps at the **Royal York Hotel** to achieve CaGBC Net Zero Building certification

Overview of
4th & 5th Generation DE/TEN Systems
&
Case Studies

4th Generation vs 5th Generation DE Systems

4th Generation

- Characterized by low temperature hot water distribution (up to 185ºF)
- 2 pipe distribution for hot water only
- 4 pipe distribution for chilled and hot water
- Enables the use of centralized plants featuring heat pumps and other renewable or waste heat resources
- Often referred to as hybrid geoexchange systems when integrating geoexchange along with other sources

5th Generation

- Characterized by maintaining temperature in the loop at near ambient conditions (below 100ºF)
- 2 (or 1) pipe distribution to deliver both cooling and heating
- Can enable optimal energy sharing and integration of waste heat sources
- Requires the use of distributed heat pumps to upgrade thermal energy from the Ambient Loop for heating and cooling applications

Comparing 4th Generation & 5th Generation Systems

Component	Benefit		Description
	4th Gen	5th Gen	
Geoexchange Field	✓	✓	• 5th Gen allows for simpler integration throughout the network
Central Plant	✓		• Enables operational optimization to improve system COPs • Ability to take advantage of time-of-use rates or demand management programs • Diversity of loads can reduce total installed capacity • Draw back is that considerable space is required
Supplemental Systems	✓		• Central plants allow hybridizing the geoexchange field with supplemental systems
Distribution	–	–	• 4th Gen offers relatively simple system hydraulics, but at a higher cost of distribution • 5th Gen offers reduced network piping and line losses, but can lead to more complicated system hydraulics and less predictable temperatures
End-Use	✓		• 4th Gen end users benefit from simple, small ETS on site • Compared to maintaining distributed heat pumps in a 5th Gen system

Case Studies

Case Study 1:

Etobicoke Civic Centre Precinct

4th Generation DE Geoexchange System

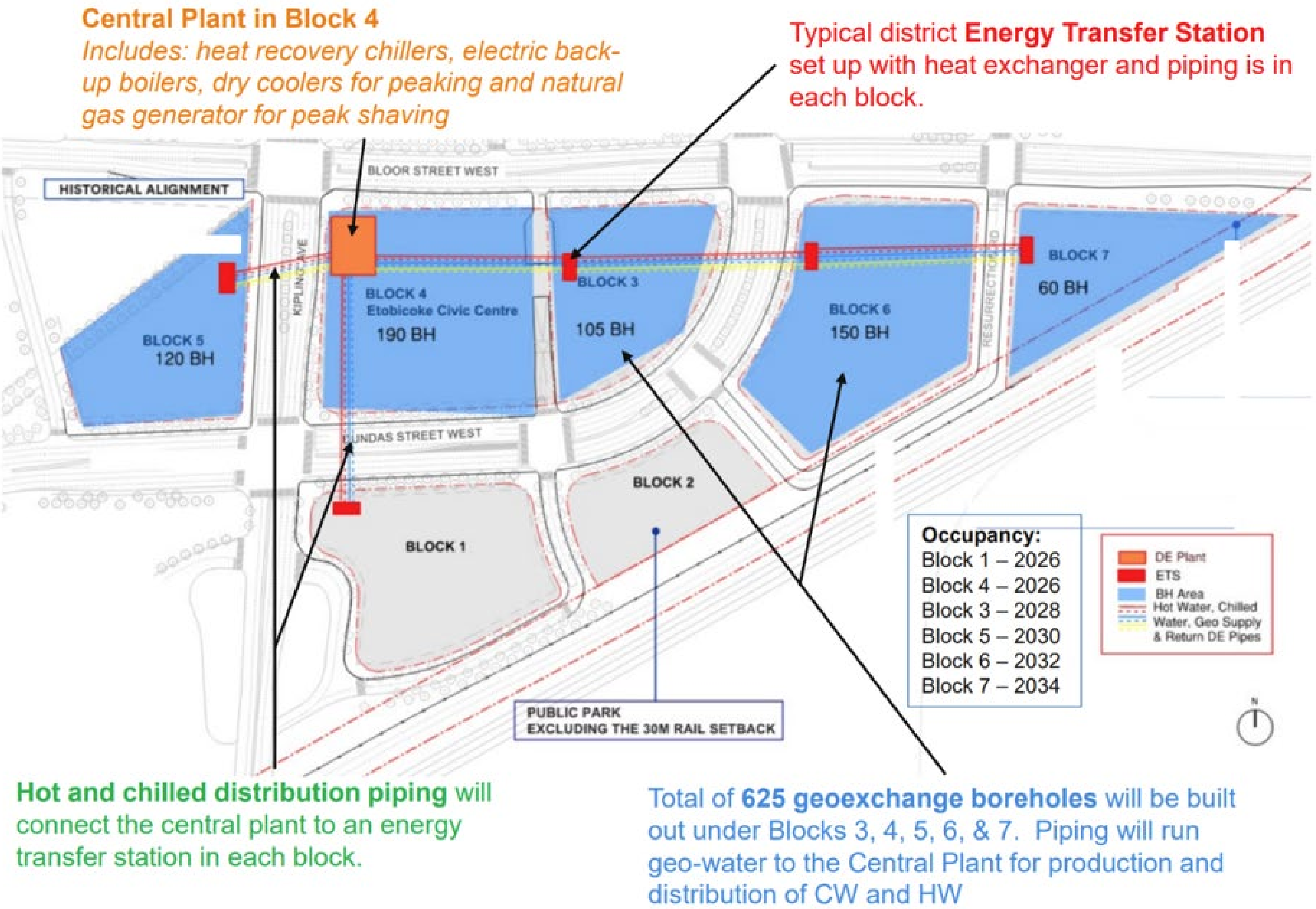
Case Study 2:

Springwater Single Family Home Community

5th Generation DE Geoexchange System

Case Study 1: Etobicoke Civic Centre Precinct

- 4th Generation DE Geoexchange System
- Mixed-use redevelopment in Toronto, Ontario, Canada
- 6 Development blocks with a combined 3M sq.ft
- Master planned by the City of Toronto and mandating adherence to ambitious low carbon standards
- Central district energy plant with geoexchange system, distribution piping system, and energy transfer stations at each end-user site

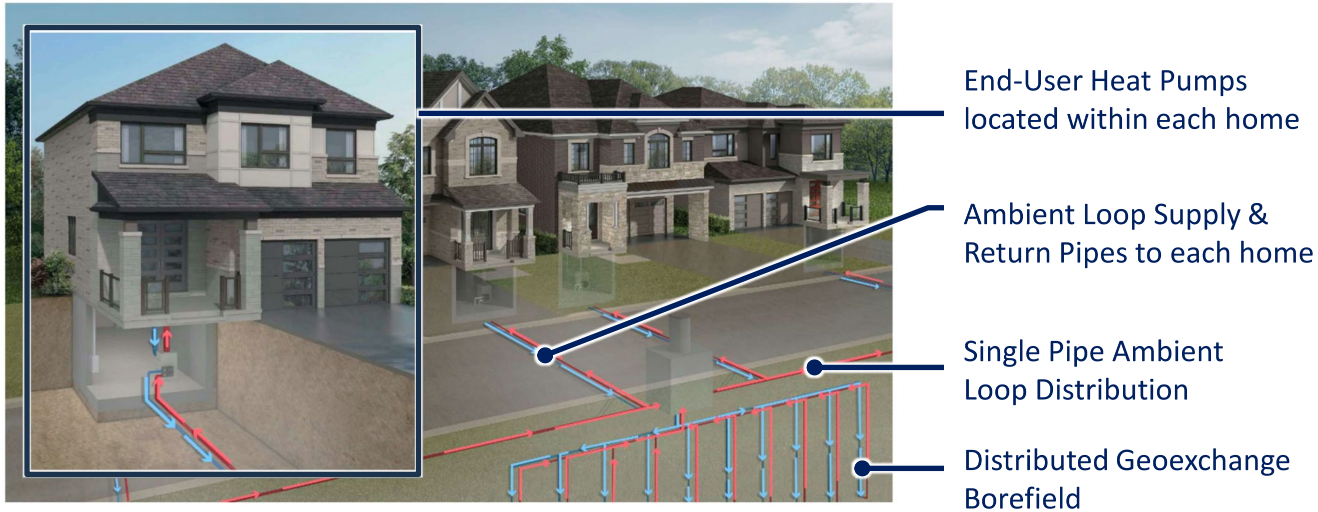


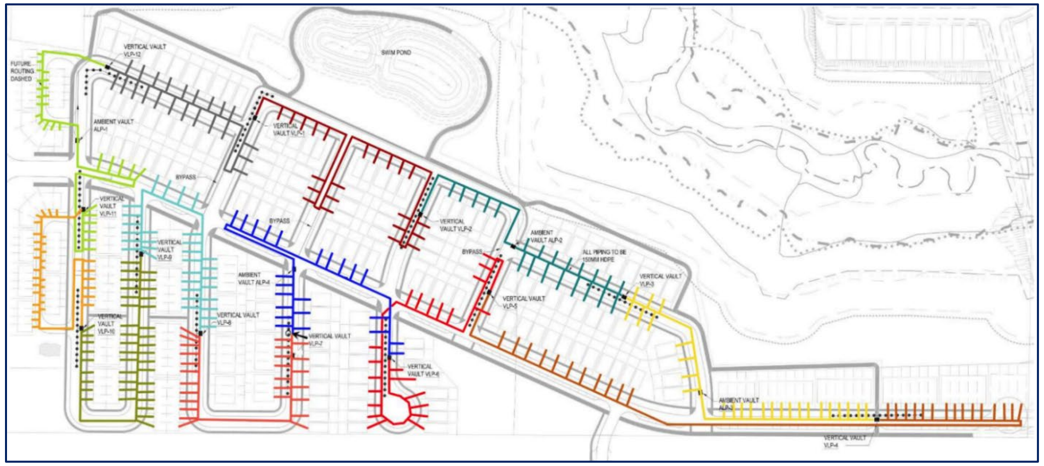
Rationale for 4th Generation DE

- **Partnership with City of Toronto** facilitated central plant hosting
- CP allowed for **space savings** and operational simplicity at end-use sites
- **Diversity of loads** reduced installed cooling capacity by ~20% and heating capacity by ~10%
- CP enabled **integration of supplemental** capacity to manage geoexchange load imbalance
- CP geoexchange system **facilitated optimization** of energy and costs
- **Economies of scale** achieved through fewer, larger capacity units
- **Increased system efficiency** and reduced operations/maintenance costs
- CP electrical generation allowed for participation in **demand response** programs
- CP provided **enhanced redundancy** and backup power for the community

Case Study 2: Springwater Single Family Home Community

- 5th Generation DE Geoexchange System
- Single-family home community in Markham, Ontario, Canada
- 312 homes, ranging from 1800 – 3000 sq.ft (~750,000 sq.ft total)
- Developed collaboratively between Mattamy Homes Canada, Enwave and the City of Markham
- Single-pipe, low-temperature ambient loop system with distributed vertical geoexchange boreholes and ground-source heat pumps at each end-user site





Rationale for 5th Generation DE

- **Eliminated need for a central plant** with distributed pumping system in buried vaults
- **Maximized sellable land** through use of underground infrastructure
- Partnership with the City allowed for coordinated **DE system and geo in the public right-of-way**
- Utilized geoexchange for space heating/cooling, **removing visible equipment**
- **Immaterial space savings for small end-users** supported ambient loop system
- **Planned electrical service** at 208V made a central heat pump plant more costly
- **Avoided geoexchange infrastructure** within private parcels for sale
- Single-pipe ambient loop system **reduced capital costs**
- Smaller scale of the system **negated any material operating cost benefits of centralizing** thermal energy

Commercial Models

	Etobicoke Civic Centre (4th Gen)	Springwater (5th Gen)
Term	30 years	25 years
Rate Structure	• Capacity Charge • Consumption Charge	• Fixed Monthly Charge
Commercial Structure	• Based on an **avoided cost business model** • **Capacity Charge** is fixed based on avoided capital and maintenance costs • **Consumption Charge** is based on a BAU flow through model of market electricity, water, and chemical costs	• Based on an **avoided cost business model** that was competitive with a zero-carbon building BAU • Capital, Utility and O&M costs are recovered through the **fixed monthly charge**
Ownership Structure	**Enwave:** • Design, Builds, Owns and Operates the Geoexchange System, Central Plant, Distribution and ETS • Lease agreement for the Central Plant with the City **Customer:** • Building side components	**Enwave:** • Design, Builds, Owns and Operates the Geoexchange System and Distribution to the building wall **3rd Party Provider:** • Owns the on-site heat pumps **Customer:** • Building side components • Utility costs of the heat pump

Conclusions – 4th Gen vs 5th Gen

Which system type is better? It depends…

- The choice between 4th and 5th generation district energy geoexchange systems depends on factors such as:
  - load aggregation benefits
  - operational complexity
  - space constraints
  - end-user preferences

- **4th generation systems** excel in scenarios where centralizing thermal energy generation offers significant advantages

- **5th generation systems** prove beneficial in distributed, smaller-scale applications

enwave ENERGY CORPORATION

enwave

ENERGY CORPORATION

Jamestown's District Heating System

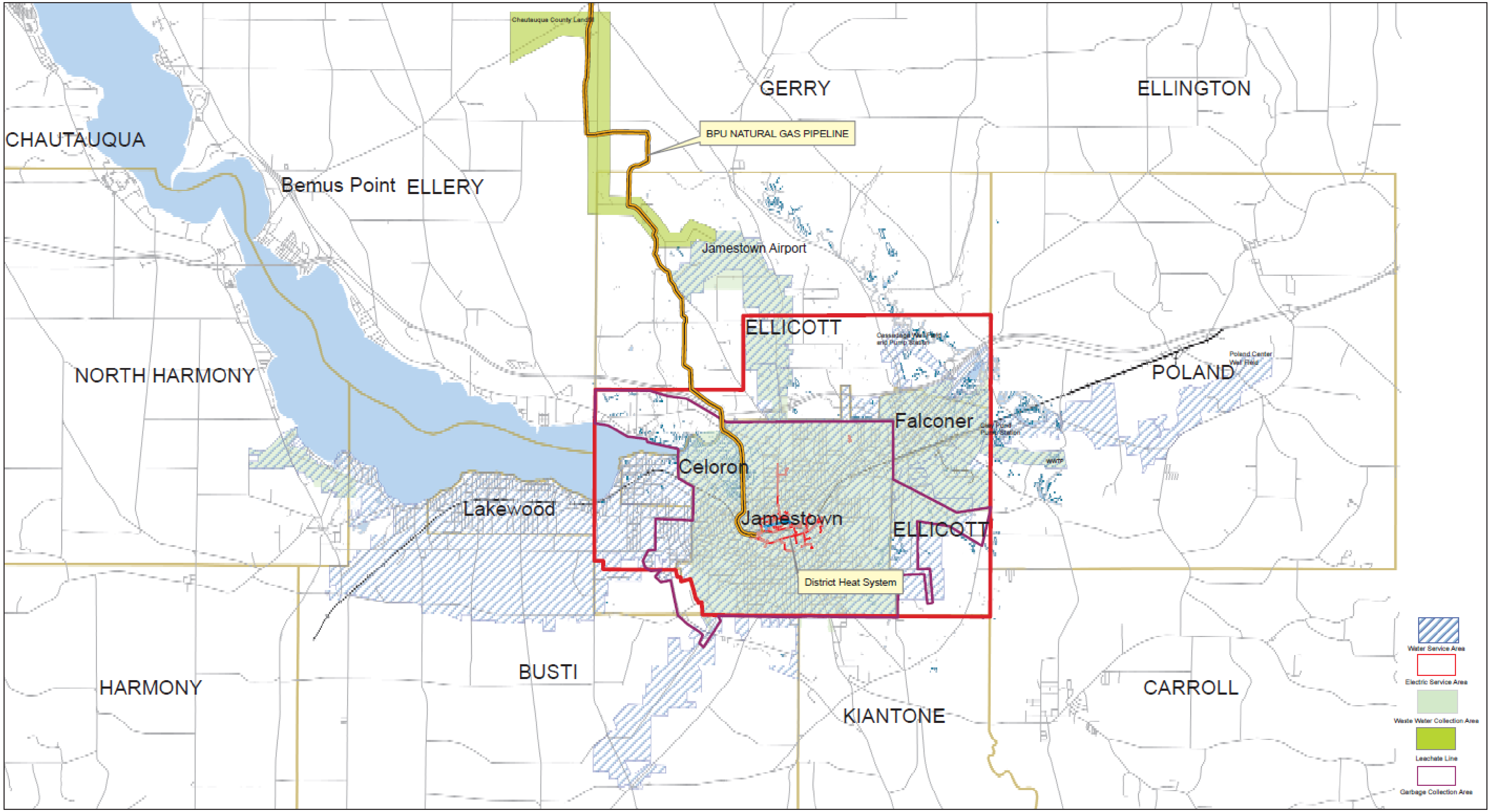
Mission of the BPU

Provide environmentally sound, efficient, cost effective electric, water, solid waste, wastewater, and district heating utility services while actively encouraging the economic growth and development of its community.

Barrie
Peterborough
Belleville
Kingston
Montpelier
Vermont
Oshawa
Vaughan
Markham
Brampton
Toronto
Lake Ontario
Kitchener
Oakville
Mississauga
Adirondack Park
New Hampshire
Hamilton
Brantford
St Catharines
Niagara Falls
Rochester
Syracuse
Utica
New York
Concord
London
Buffalo
Nashua
Albany
Lowell
Lake Erie
Erie
Jamestown
Binghamton
Massachusetts
Worcester
Springfield
Hartford
Providence
Connecticut
Rhode Island
Waterbury
Cleveland
Pennsylvania
Scranton
Bridgeport
Long Island Sound
Akron
Youngstown
New Jersey
State College
New York
Allentown
Edison
Altoona
Pittsburgh

Jamestown Board of Public Utilities

- Jamestown has been generating power since the 1891
- Incorporated in 1923 as a Non-Profit Municipal Entity
- One of 51 electric municipals in NY
    - 3rd largest but small compared to the large private utilities
    - 1 of only 3 with electric generation capability
- 5 Separate Divisions
    - Electric - $44Mil
    - Water - $5.6Mil
    - Waste Water - $5.3Mil
    - Solid Waste - $2.7Mil
    - District Heat - $1.3Mil
- 150 Employees



JAMESTOWN BPU SERVICE AREAS

N

Jamestown's District Heating Journey

1

1948

Jamestown's first District Heating System supplied steam heat

2

1969

Natural gas boilers and natural gas distribution become competitive, Jamestown's steam system shut down

3

1981

Natural gas prices escalated rapidly, Jamestown embarks on new District Heating System, one that operated at a lower temperature

4

1984

Pilot project with four customers started construction

5

1986-1990

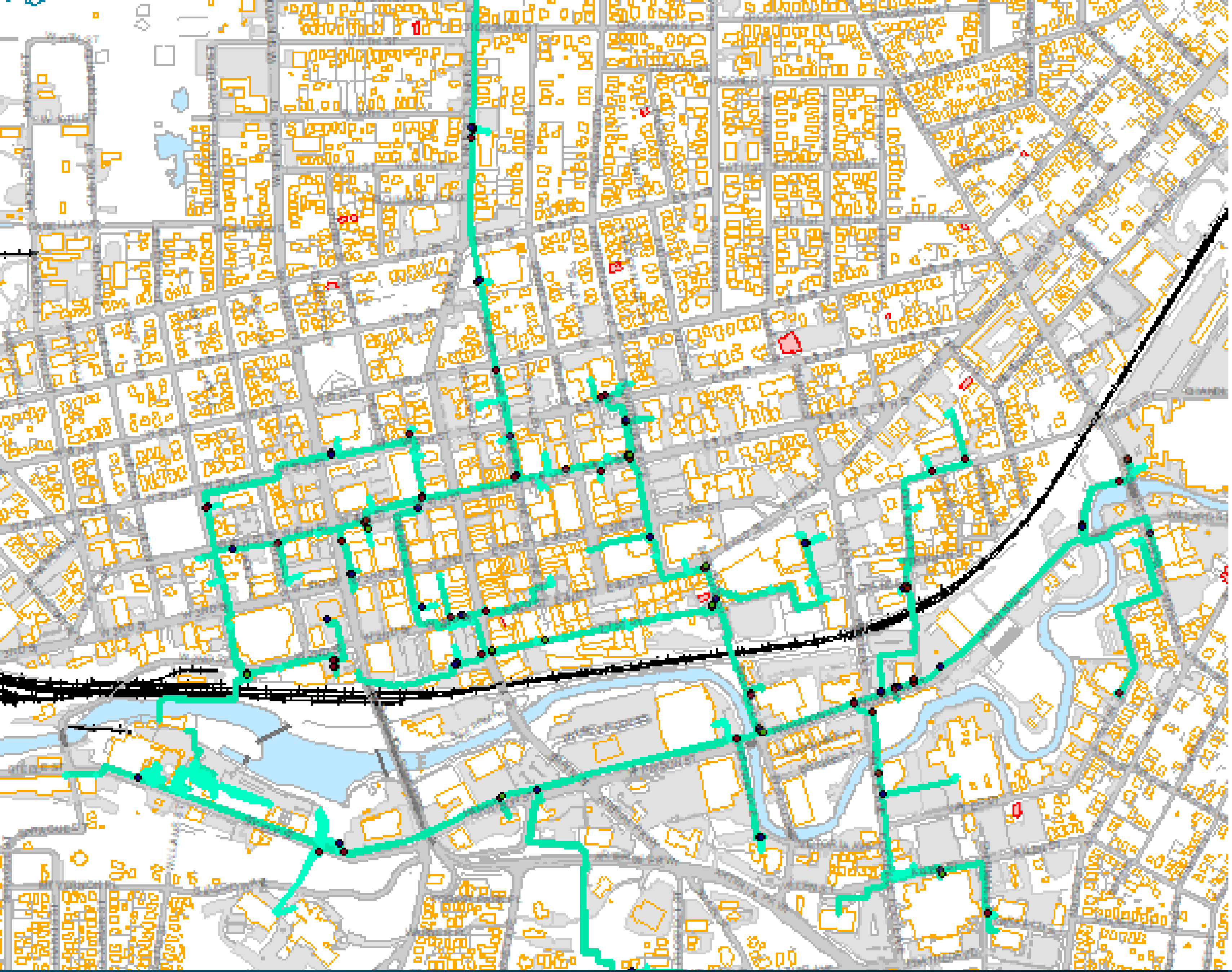
85% of today's system was constructed

6

PRESENT

The system has provided reliable and affordable heating for over 40 years but needs significant investments as it is near the end of its useful life

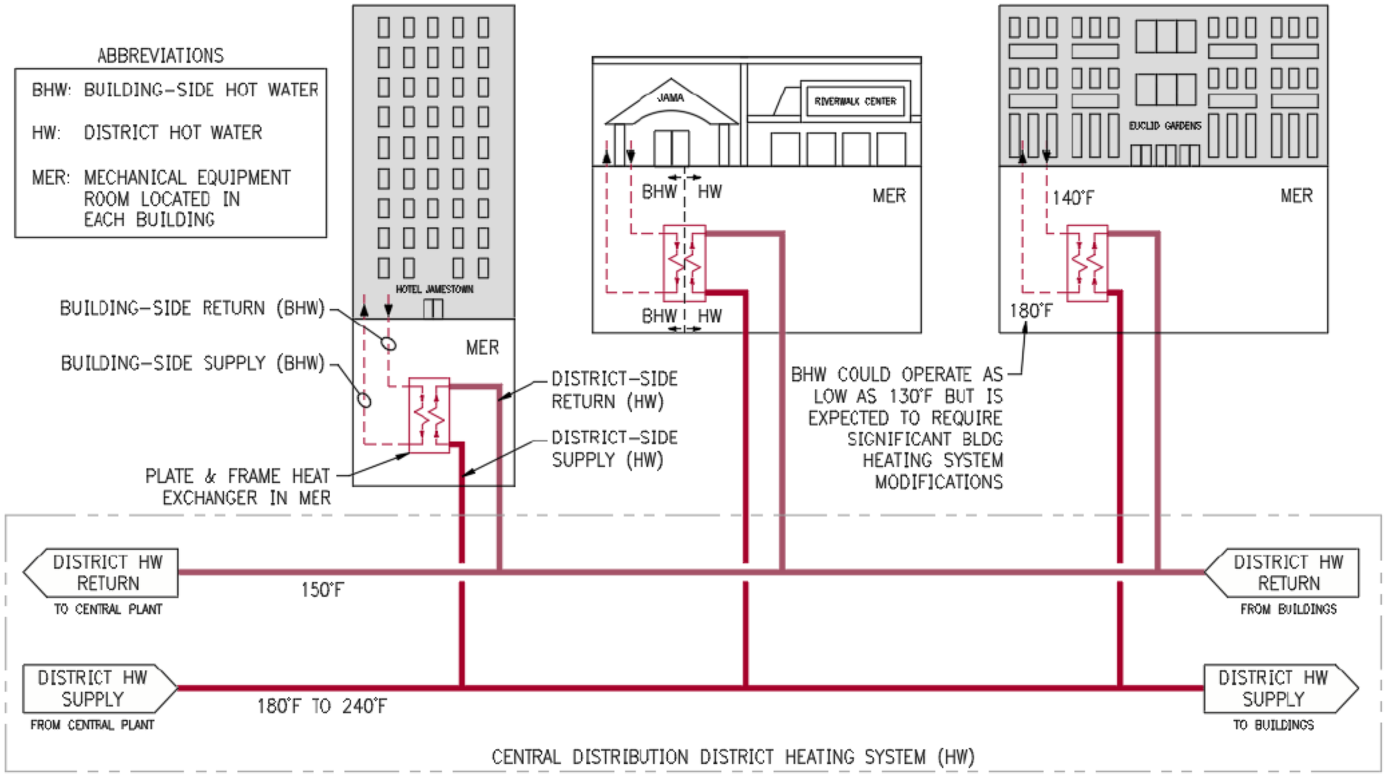
So… it's time to chart the path for the next era of District Heating



Who has District Heating today?

- 70 Customer Facilities
- Over 700 apartments
- Primarily disadvantaged community census tracts
- Serves not-for-profit organizations, churches, public school buildings, regional hospital, small businesses

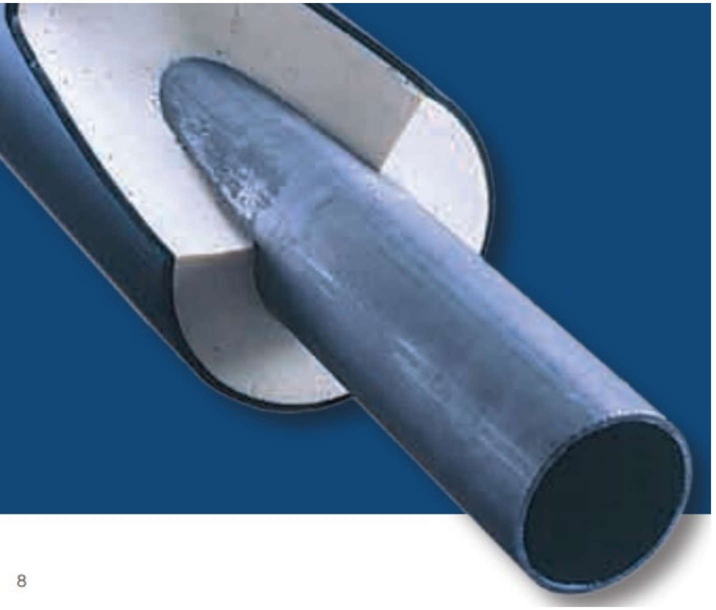
Distribution General Operation

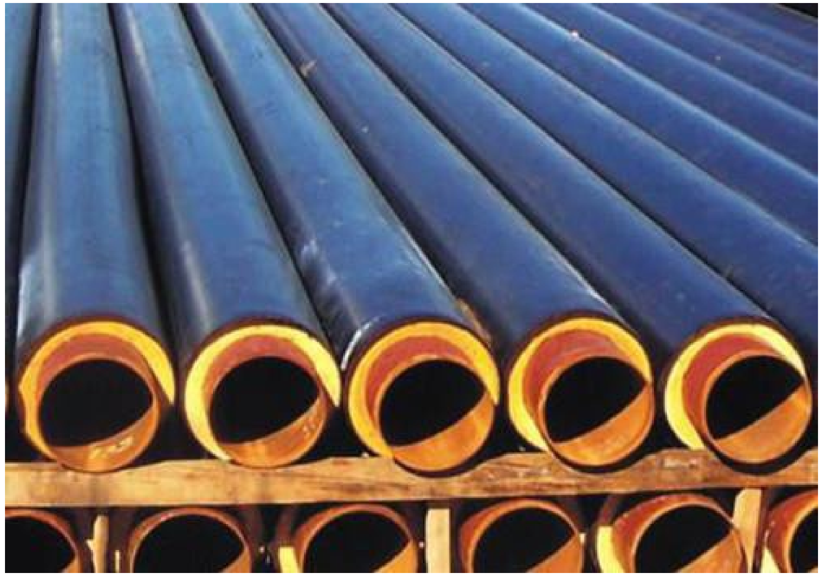


Annually the system consumes about 170,000 MMBTU (~50,000MWh)

Peak in the winter heating season is around 31,000 MMBtu/Month (~9,085 MWh/Month) an average hourly rate of 36 Dekatherms/hr (~10MWh)

Current Distribution Pipe – EN 253



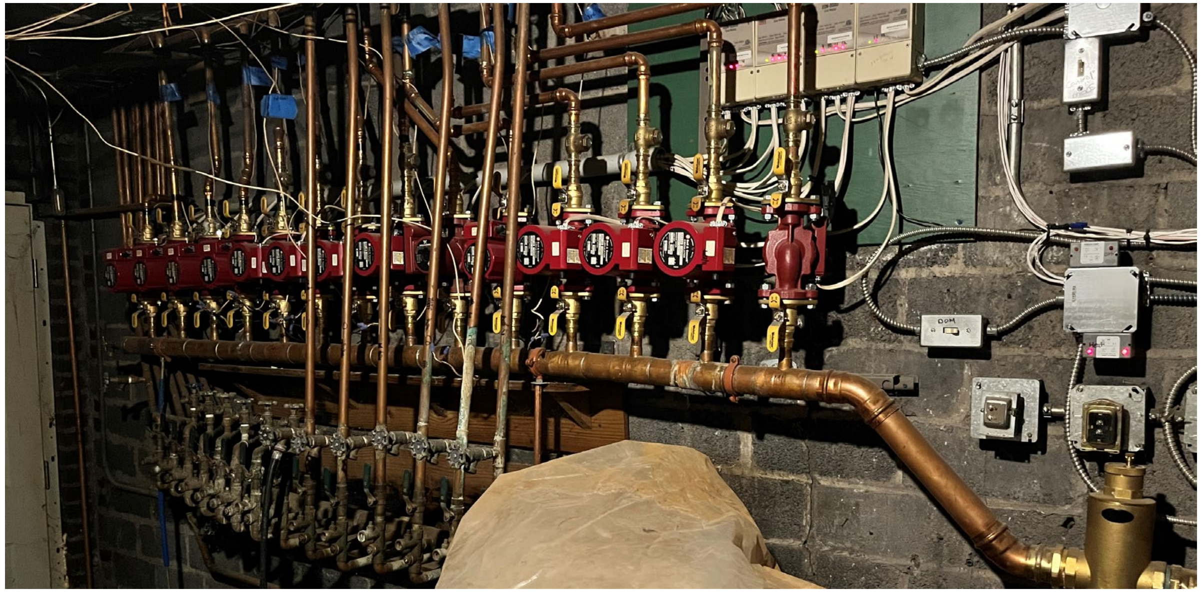



DISTRICT
HOT WTR SPLY
HOT WTR RTN


MADE IN AMERICA
SUPERCHANGER
A product of TEXAS DIVISION - TRANTER INC., WICHITA FALLS, TX.


HEAT EXCHANGER 5
HX-5
DISTRICT HOT WATER
HOT WATER RETURN
DISTRICT HOT WATER SUPPLY

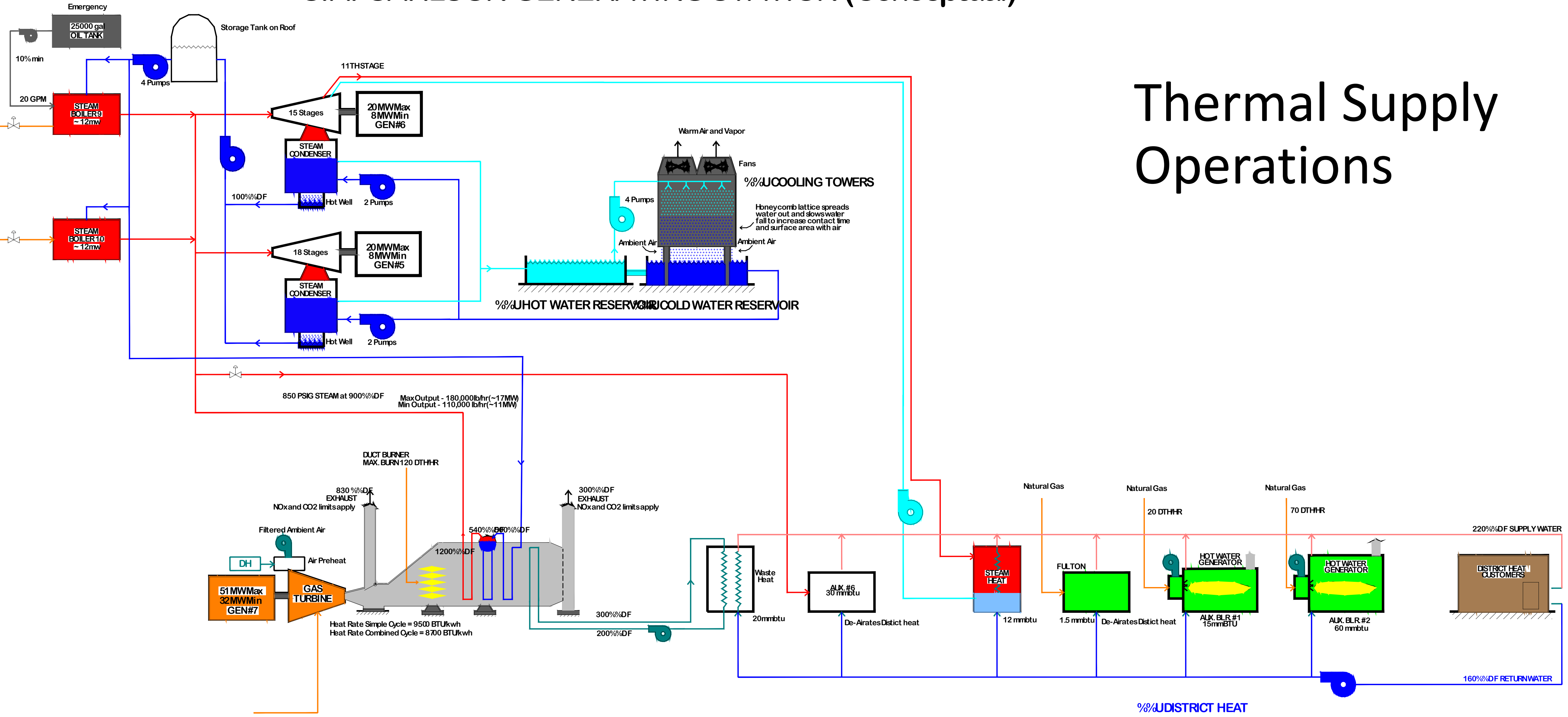

HX-2
HX-3
HX-4
DISTRICT HOT WATER RETURN


DOM


HOT WATER
AO Smith
AO Smith
TJV 120A
TJV 120A
INSPECTION OPENING
wessels company
TTA-42

S.A. CARLSON GENERATING STATION (Conceptual)

Thermal Supply Operations



Why Change?

Existing infrastructure is near end of life.

State and federal direction toward economy-wide decarbonization.

Economics of current system using natural gas are at risk.

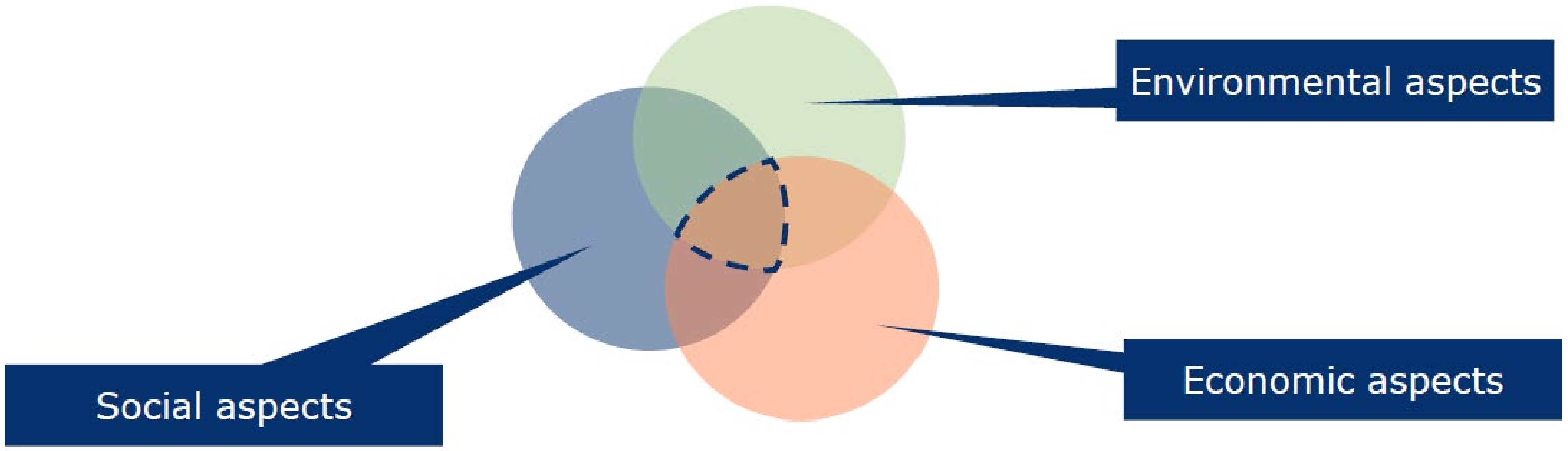
Lack of unified action may result in the most expensive community outcome (direct electrification).

Industry now needs to stay competitive economically and environmentally. Falling behind could mean loss of local industry and jobs.

Local emissions impact community health; improving local health has personal, social and economic benefits.

Retool DISTRICT HEATING

CHARTING FOR THE FUTURE

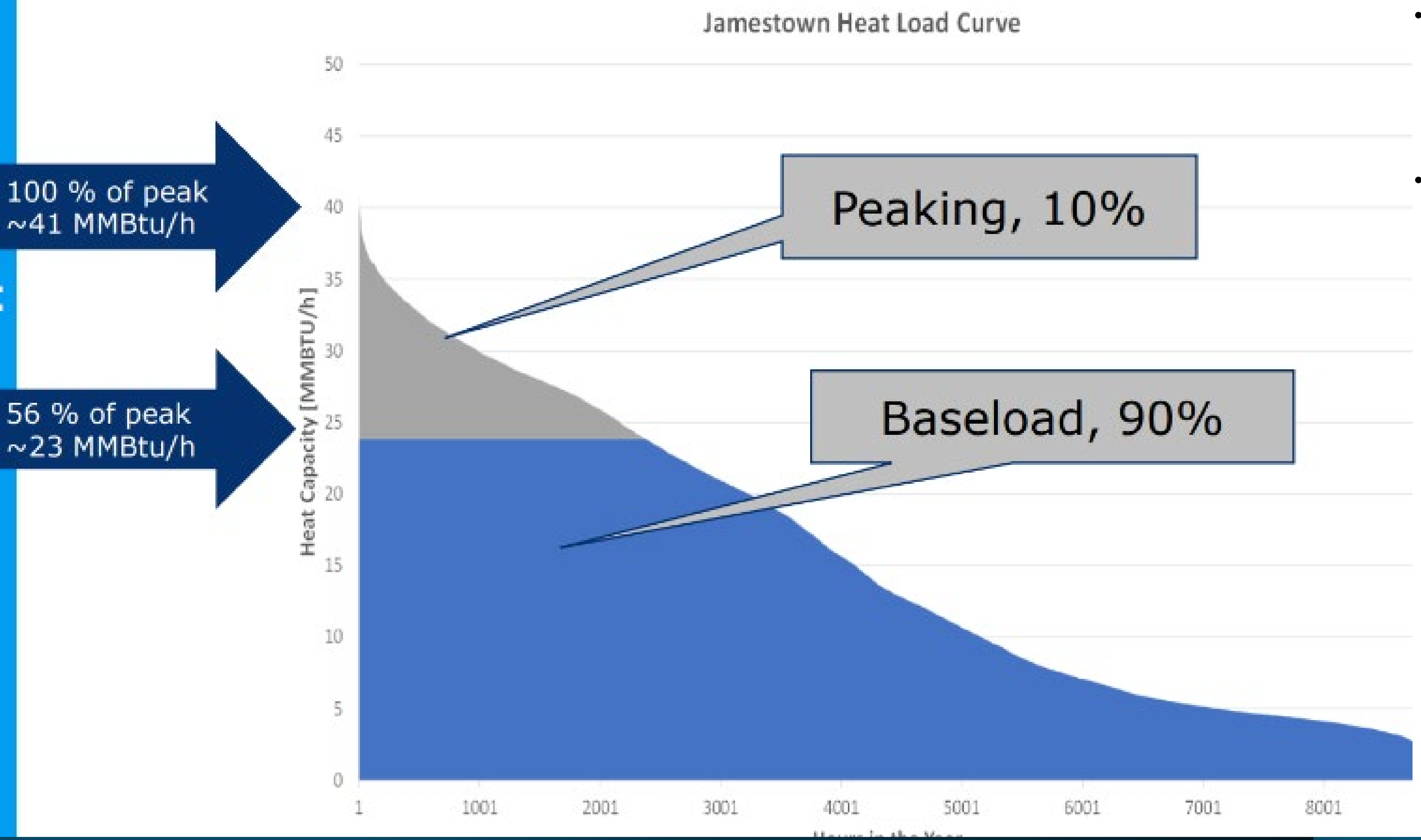


So, what are the options?

A year and a half engineering study by Ramboll with support from NYSERDA reviewed 30 technologies ranked on CAPEX, OPEX, CO2 Neutrality, System Integration, Quality, and availability

- 5 Fossil Technologies (Natural gas boiler, hydrogen, solid state oxy, oil, turbines/engines)
- 16 Renewable Technologies (Biofuel, Biomass (various), hydrogen (various), electric (various), solar thermal, etc.)
- 9 Electrification technologies (Electric Boiler, Heat Pumps (air, air to water, etc.), ground source heat, recovery chillers, water-water (sewage)

Baseload / peaking production (preliminary load curve)



- Baseload / peaking characteristics
  - Often high capital expense (CapEx)
  - Should be in operation many hours per year
  - Should have low energy cost
- Peaking / backup technologies characteristics
  - Often low CapEx (e.g., boiler technology)
  - High fuel costs (so low operation hours)
  - Very high technology reliability (backup)
  - High fuel supply reliability

Options that warranted a deeper dive

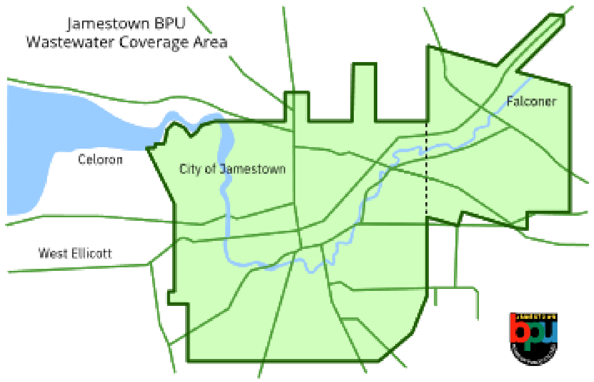
	Business As Usual	Centralized					Centralized Ambient Loop		Decentralized Natural Gas	Decentralized Electric	
Scenario	**A**	**B&C 1**	**B&C2**	**B&C3**	**B4**	**B5**	**D1**	**D2**	**E1**	**F1**	**F2**
Load	Current	B:Current, C: w.o low density area			Current	Expansion	Current	Current	Current	Current	Current
Baseload	NG Boiler	GSHP w/ ASP	GSHP w/ ASP	ASHP w/ W-W HP	WSHP (Waste Water)	WSHP (Waste Water)	Heat Pump	Heat Pump	NG Boiler	Individual HP's	Individual HP's
Peaking/Backup	NG Boiler	NG Boiler	Electric Boiler	NG Boiler	NG Boiler	NG Boiler	Heat Pump	NG Boiler	NG Boiler	NG Boiler	Individual HP's
Thermal storage	None	Yes	Yes	Yes	Yes	Yes	Yes (Local)	Yes (Local)	No	Yes (Local)	Yes (Local)

The study shows that the use of clean, warm water from the BPU's wastewater treatment plant effluent (B5) is the lowest-cost decarbonization option.

The wastewater option includes a potential significant expansion to add the community college, industrial corridor and additional schools.

How will it work?

BPU WASTEWATER COLLECTION AREA

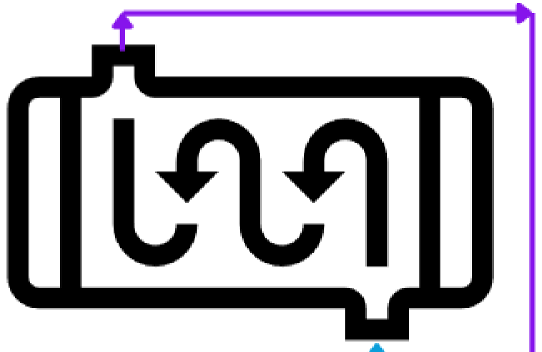


Wastewater is collected through existing waste water network

WASTEWATER TREATMENT PLANT

Waste stream flows to the wastewater treatment plant which cleans up to 2 million gallons of wastewater per day.
(Check out the wastewater plant tour to learn more.)

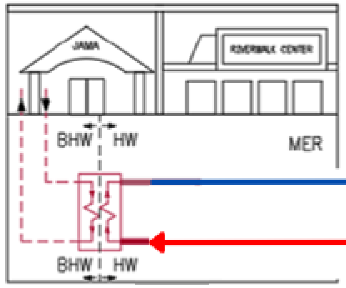
NEW HEAT EXCHANGER



Heat can be extracted from the warm clean water with a heat exchanger

Clean water discharged to creek.

CUSTOMER UTILIZATION

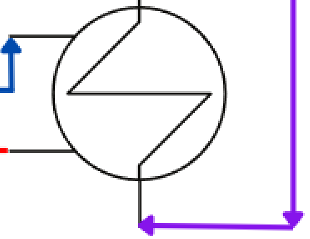


Customers extract heat with heat exchangers to distribute to their systems.

DISTRIBUTION NETWORK

Hot water is piped to new customers along the way to the existing network.

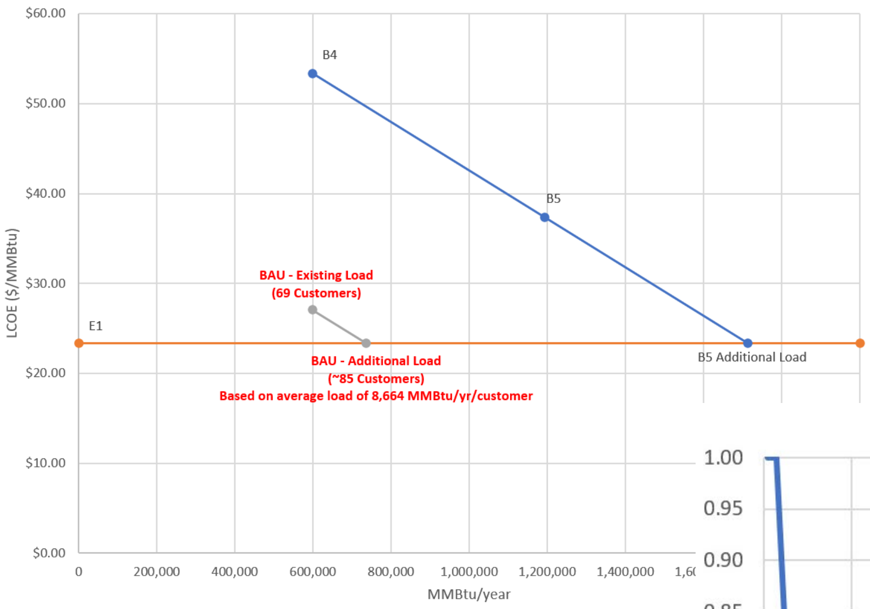
HEAT PUMP



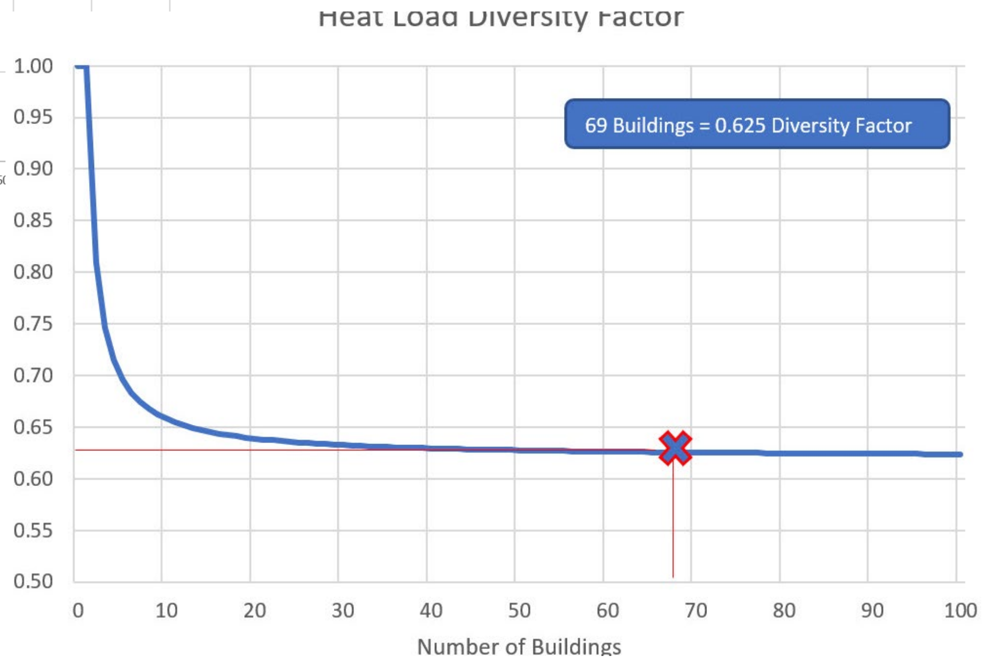
A water-water heat pump steps up the temperature of the heat source.

Why do more customers lower cost for everyone?

The primary challenge with this system is the upfront capital cost but the more customers the BPU can get on the system, the more that upfront capital cost can be spread out and the lower the unit cost for everyone.

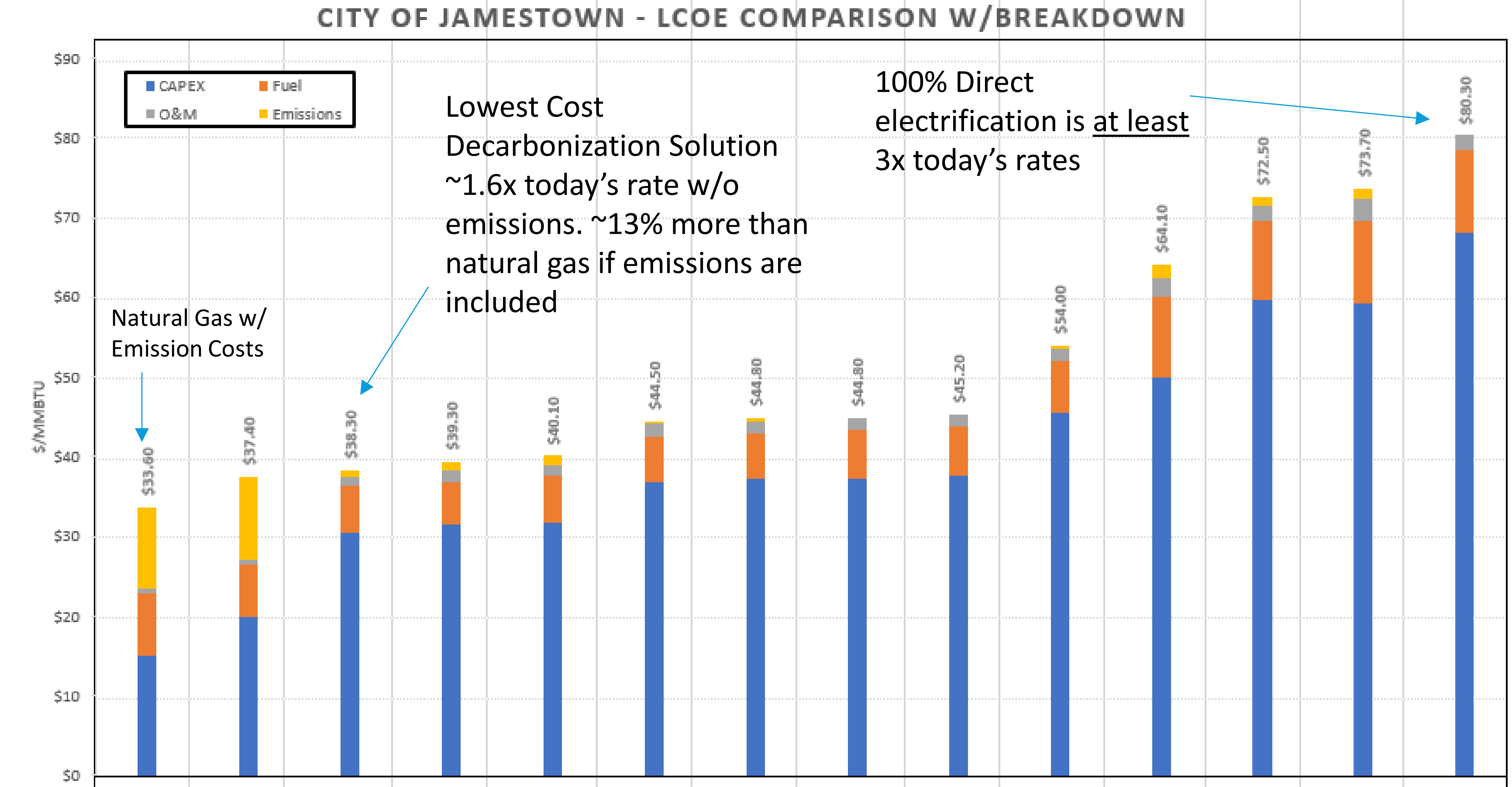


Additionally, due to load diversification the total installed capacity can be 37% less than if everyone installed their own equipment.



There is also potential for thermal energy storage which is far cheaper per unit of energy than electric storage options

What will it cost?

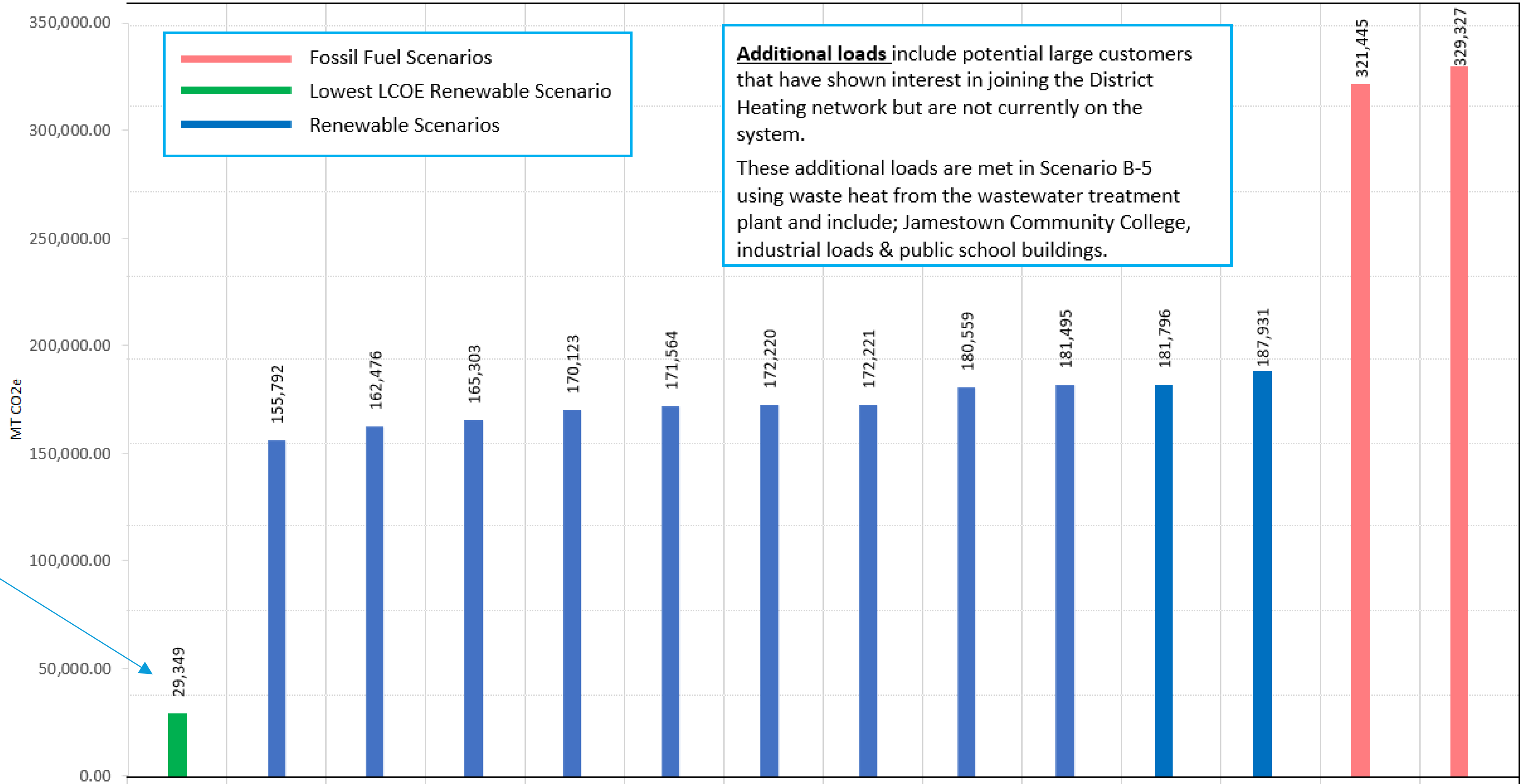


Scenario	E-1	BAU	B-5	C-3	B-3	C-1	B-1	C-2	B-2	B-4	D-2	F-1	D-1	F-2
Load	Current	Current	Additional	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current
Network	Decentral-ized	Existing 2GDH	WWT 4GDH	Hybrid 4GDH (S. of 6th)	Existing 4GDH	Hybrid 4GDH (S. of 6th)	Existing 4GDH	Hybrid 4GDH (S. of 6th)	Existing 4GDH	WWT 4GDH	Ambient 5GDH	Decentral-ized	Ambient 5GDH	Decentral-ized
Baseload	NG Blrs	NG Blrs	WSHP (WWT)	ASHP-WSHP	ASHP-WSHP	GSHP	GSHP	GSHP	GSHP	WSHP (WWT)	WSHP	ASHP-WSHP	WSHP	ASHP-WSHP
Peaking	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	Electric Blrs	Electric Blrs	NG Blrs	NG Blrs	NG Blrs	WSHP	ASHP-WSHP
Backup	NG Blrs	Fuel Oil	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	ASHP-WSHP

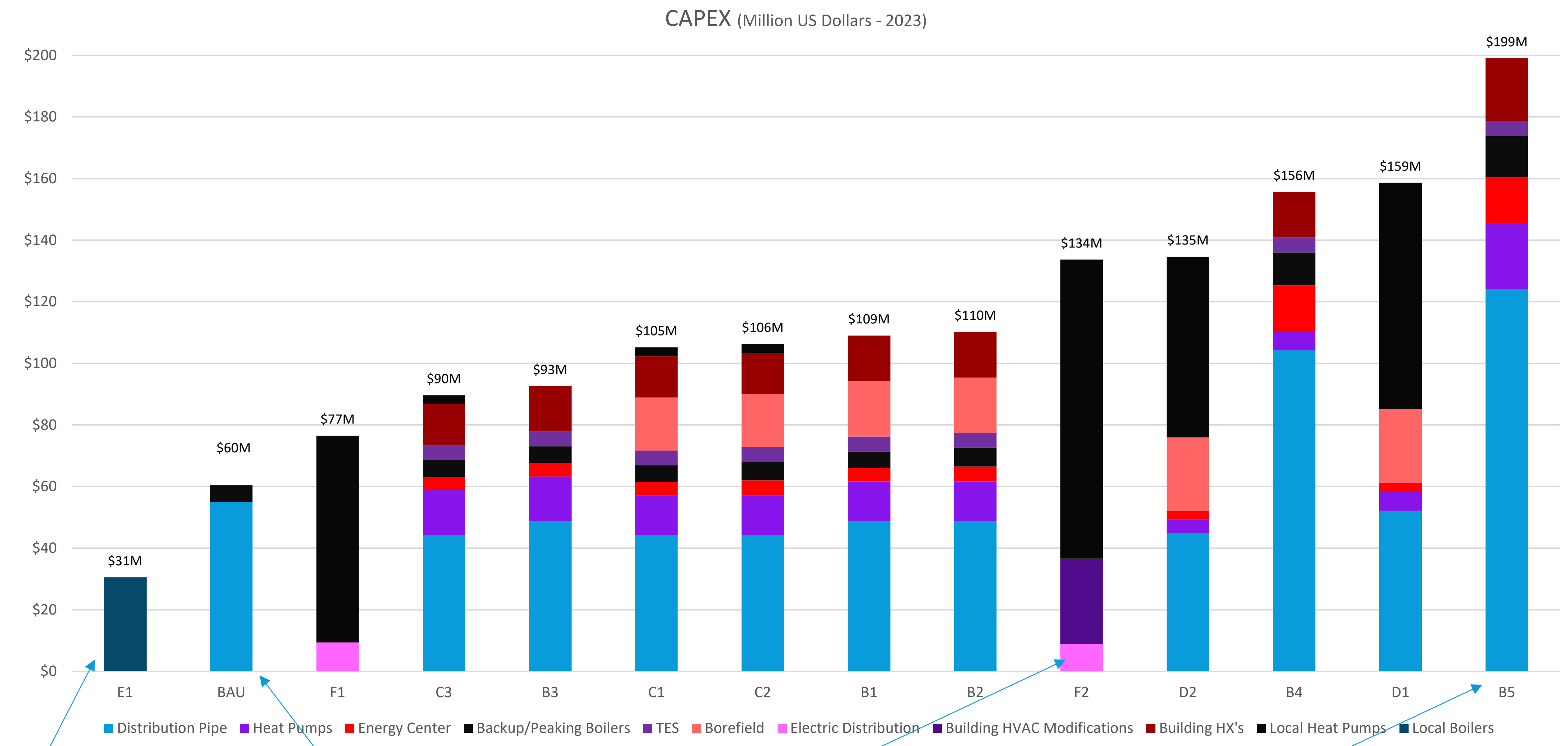
The levelized cost of energy (LCOE) is a comprehensive way of evaluating total energy costs. It is presented as a dollar cost per unit of heat delivered ($/MMBTU). This cost includes capital costs (CAPEX), fuel costs, operation and maintenance costs (O&M), and emissions costs (per NYS Cap and Invest targets). This enables comparison of various technologies that have very different cost structures over a 20-year period.

20-YEAR EMISSIONS COMPARISON (MT $CO2_E$) W/ADDED LOADS

Lowest Cost Decarbonization Solution - the biggest green house gas reduction due to increased service area



Scenario	B-5	B-4	B-2	C-2	B-1	C-1	F-2	D-1	D-2	B-3	C-3	F-1	BAU	E-1
Load	Additional	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current
Network	WWT 4GDH	WWT 4GDH	Existing 4GDH	Hybrid 4GDH (S.of 6th)	Existing 4GDH	Hybrid 4GDH (S.of 6th)	Decentral-ized	Ambient 5GDH	Ambient 5GDH	Existing 4GDH	Hybrid 4GDH (S.of 6th)	Decentral-ized	Existing 2GDH	Decentral-ized
Baseload	WSHP (WWT)	WSHP (WWT)	GSHP	GSHP	GSHP	GSHP	ASHP-WSHP	WSHP	WSHP	ASHP-WSHP	ASHP-WSHP	ASHP-WSHP	NG Blrs	NG Blrs
Peaking	NG Blrs	NG Blrs	Electric Blrs	Electric Blrs	NG Blrs	NG Blrs	ASHP-WSHP	WSHP	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs
Backup	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	ASHP-WSHP	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	Fuel Oil	NG Blrs
Additional Loads Heat Source	WSHP (WWT)	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs	NG Blrs



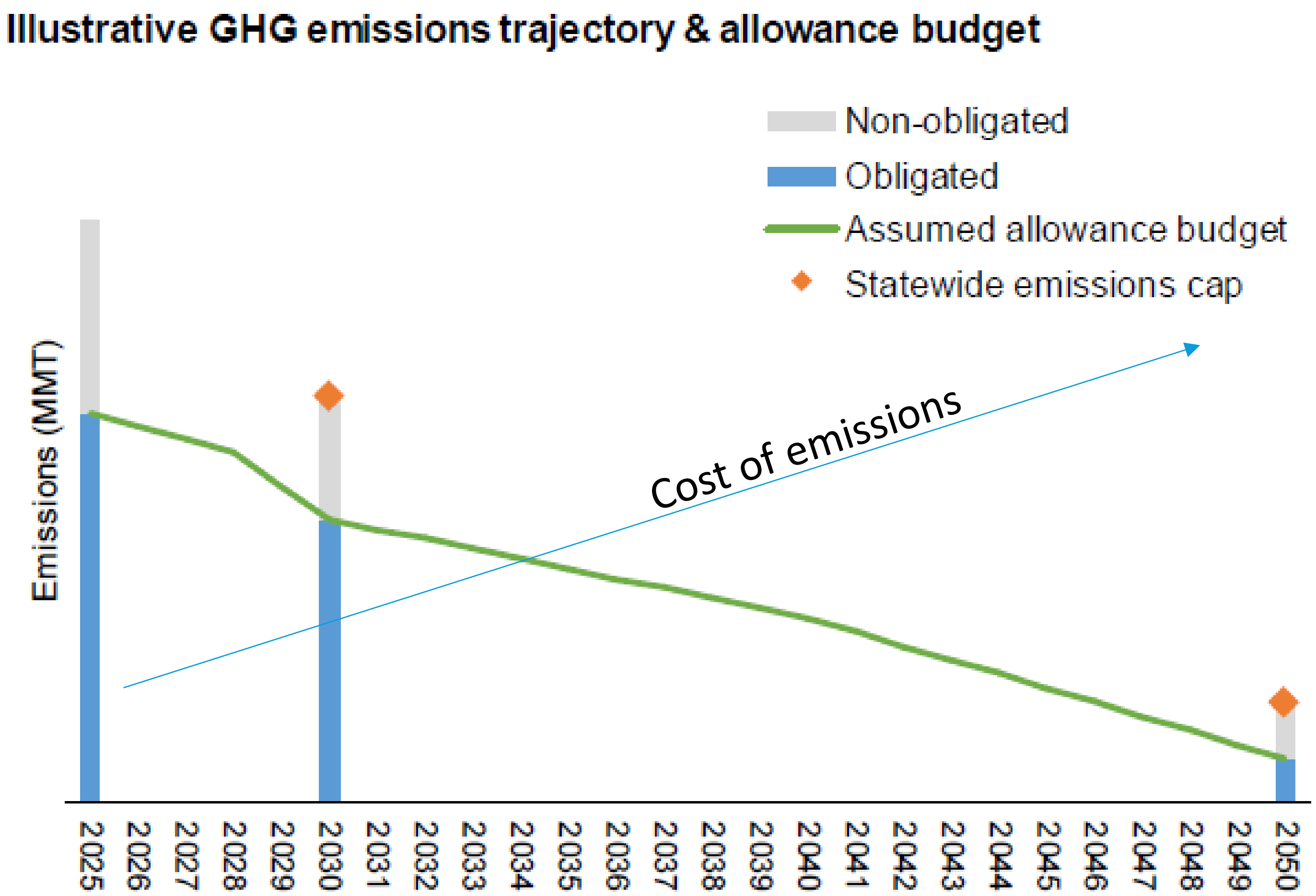
Decentralized Natural Gas

Today's system if we kept the same and replaced pipe

Decentralized Air Source Heat Pumps (not including transmission or capacity needs)

Lowest Levelized Cost Decarbonization Solution Has the highest capital cost…

What if we wait?

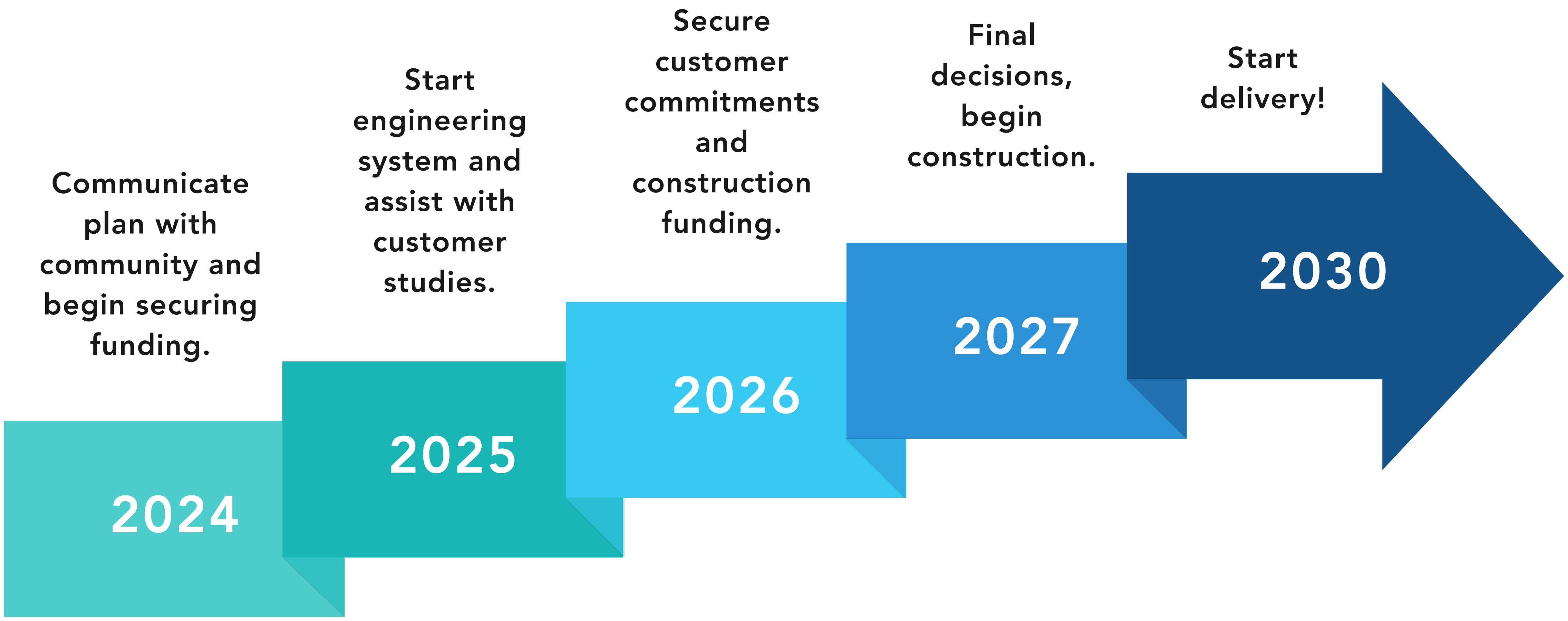


Community members will each make their own decisions, and the lack of coordination now will make it difficult or impossible to come back and create a better system.

Rising costs may not be realized until it's too late to facilitate a central system. Community action and coordination now is required to facilitate the lowest cost option.

Federal and state funding for this initiative will likely not be around long-term.

What is the future timeline?



Retool DISTRICT HEATING

CHARTING FOR THE FUTURE

JAMESTOWN BPU BOARD OF PUBLIC UTILITIES

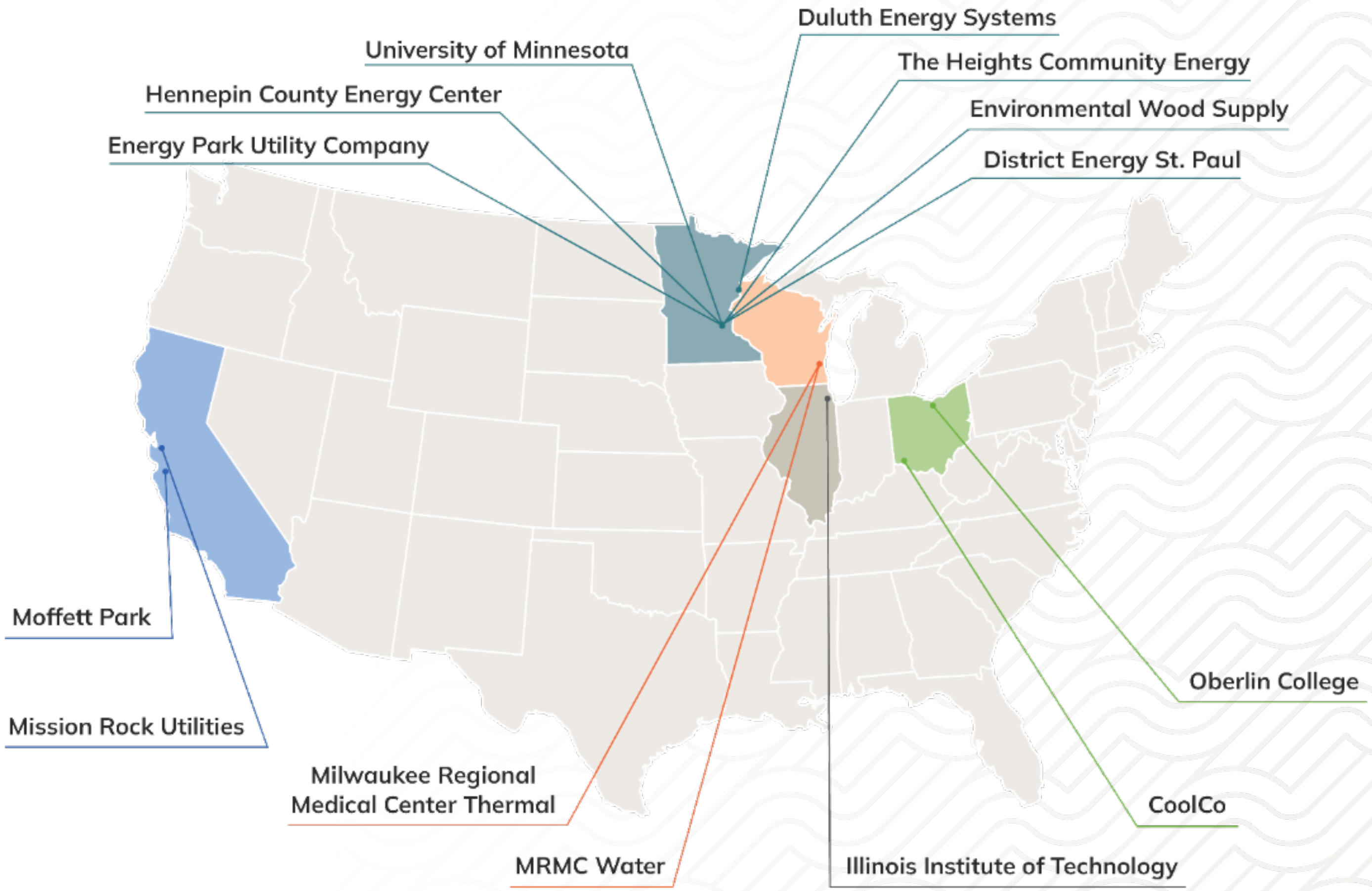
DISTRICT ENERGY ST. PAUL™

District Energy St. Paul – Nonprofit Model

About Ever-Green Energy

Leveraging decades of **operations, planning, and engineering** experience to develop and advance smart and sustainable **community and campus energy systems**.

System Development includes studies & planning, system design, business & financial advisory, and policy planning



District Energy St. Paul

DISTRICT ENERGY ST. PAUL™

- Over 30 million square feet
- Campus within a campus – St. Paul College
- Office, retail, residential, city, county, state, hospitality, sports venues
- Medium-temperature hot water heating
- Largest hot water system in North America (56 miles of piping)

Serving Saint Paul for 40 Years

DISTRICT ENERGY
ST. PAUL™

1979
District Energy established
hot water conversion

1983
1st heating customers served

1993
1st cooling customers served

1994
chilled water storage added

1997
1st wood biomass integration

2003
wood-fired combined heat and power added to system

2011
addition of solar thermal

2015
geothermal and wastewater sources studied

2019
elimination of coal

2021
advanced metering and customer portal
carbon-neutral cooling

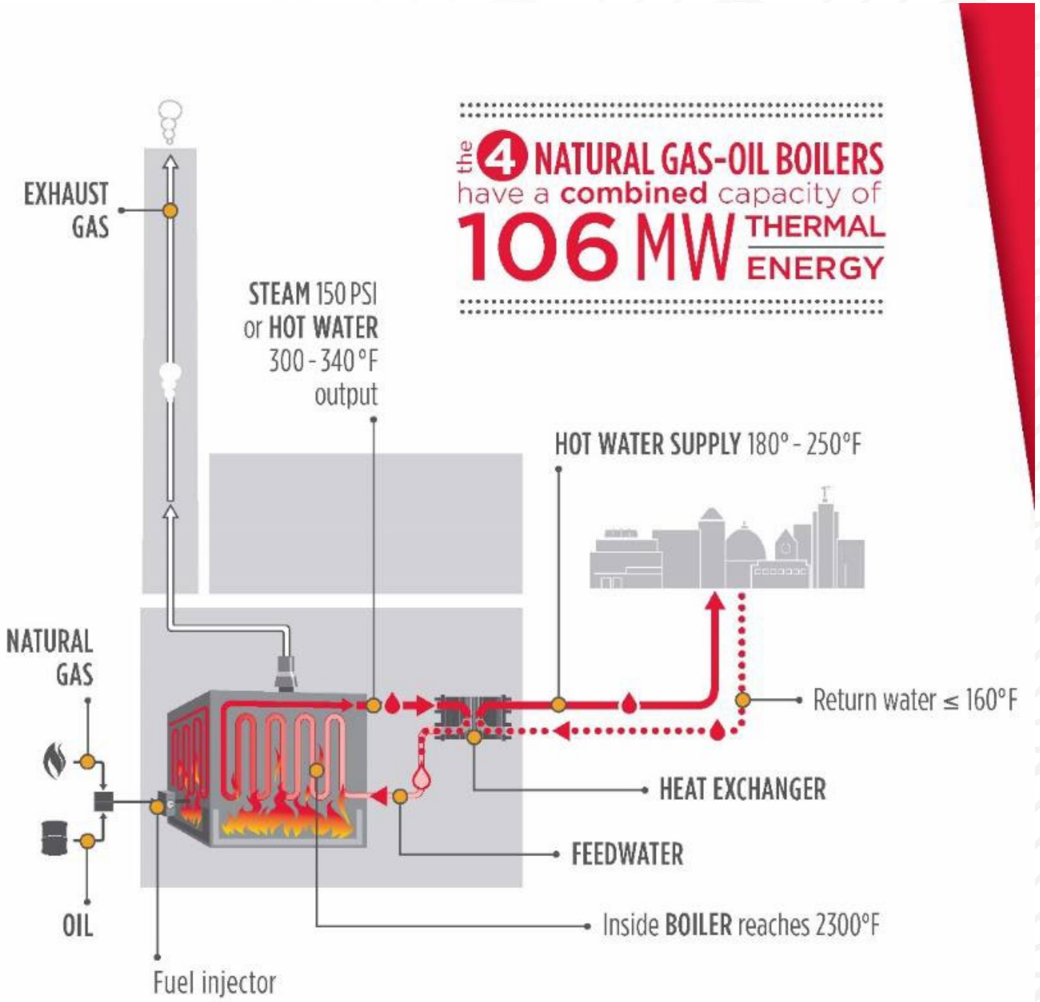
2023
hydrogen demonstration with Caterpillar and DOE

2024
completed wastewater heat recovery feasibility study

ADVANCEMENT + INTEGRATION
CARBON NEUTRALITY
2050

Heating Production

- 6 gas/oil-fired boilers (194 MW)
- 1 Combined Heat and Power plant (55 MW)
- Regions Hospital (up to 25 MW)
- Mobile boilers
  - 1 at 5 MW
  - 2 at 2.5 MW
- Solar Thermal (1.2 MW) – largest array connected to a district energy network in North America



Cooling Production

Kellogg – Primary Plant

- 7 electric chillers (15,387 tons)
- 2.5 million gallons thermal storage (at 3,600 GPM, 12 hours of operation about 2,200 tons)

10th Street

- 3 electric chillers (7,000 tons)
- 4.2 million gallons thermal storage (7,000 GMP for 12 hours about 4,200 tons)

Satellite chillers

- Regions Hospital (1,500 tons)
- State Complex load shed (3,000 tons)
- Xcel Energy Center for games (500 tons)

Under construction

- 2.1 million gallon TST on north end of the network
- New 1,500 ton chiller
- Electric boiler provisions

Thermal Storage

- 6.7 million gallons of storage capacity (2.1 million additional under construction)
- Savings through off-peak electricity rates
- Chilled water storage reduces peak-electric demand
- Firm capacity for weather events
- Hot water compatible for future eboiler integration

Solar Thermal

- First integration into a district energy system (largest in North America)
- 1.2 MW
- 1000 Megawatt-hours of heat each year

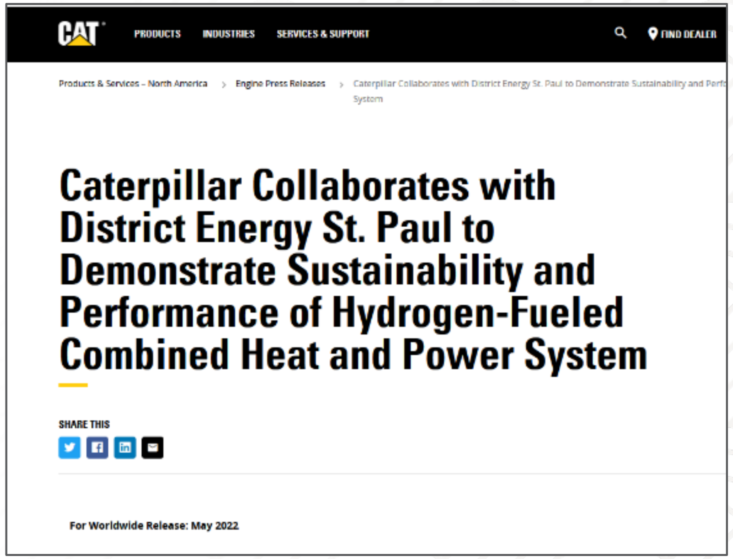
Biomass-Fired Combined Heat and Power

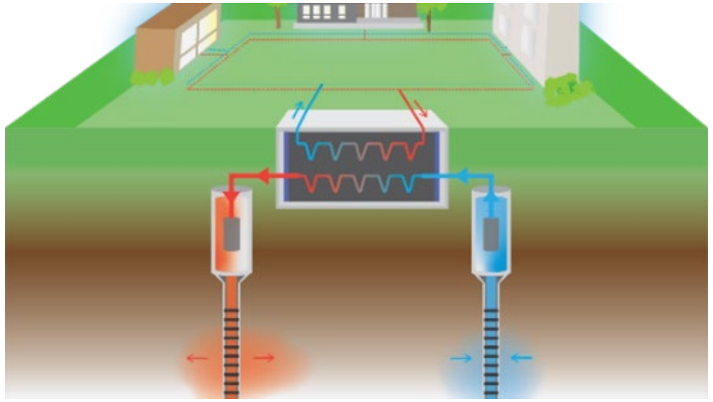
DISTRICT ENERGY ST. PAUL™

- 33 MW of electricity – 25 MW to the grid
- 55 MW of heat
- 300,000 tons of renewable, clean, urban wood residue per year
- Primary host for storm-damage, diseased, and waste wood in the Minneapolis-St. Paul metro area
- Up to 80,000 tons of Greenhouse gas CO_2 reduced per year

Continuous Advancement

- 68% carbon reduction 2000 - 2022
- Goal of carbon neutral by 2050
- Planning for integration of electrification
- Wastewater heat recovery
- Data center waste heat recovery





Private Nonprofit Business Model

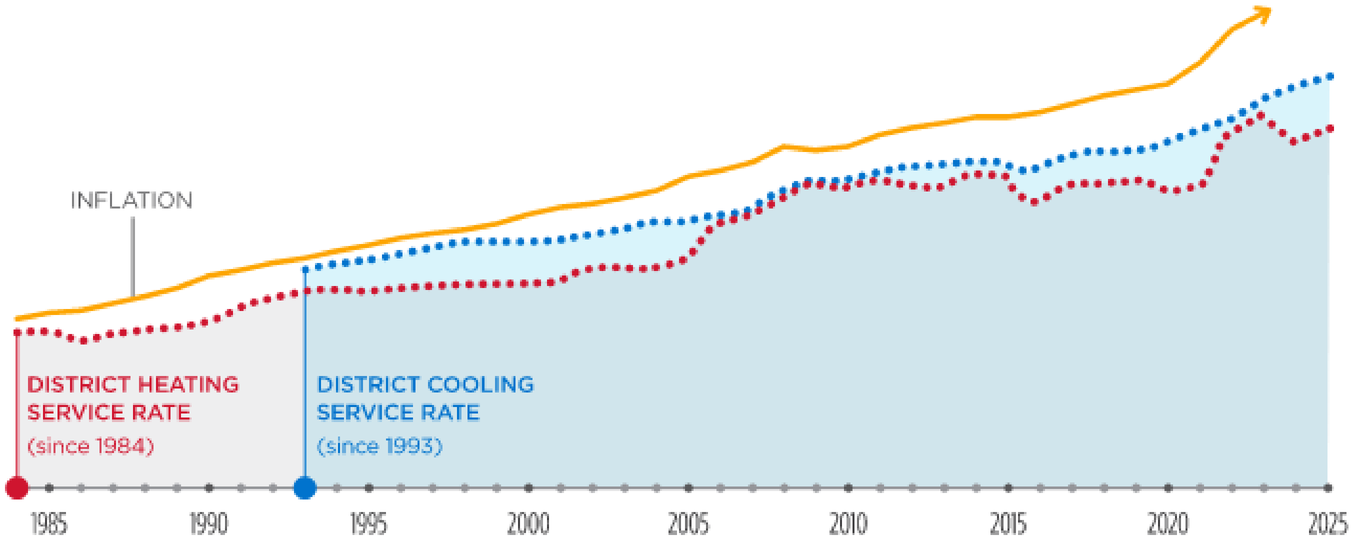
DISTRICT ENERGY ST. PAUL™

- 501(c)3 non-profit utility
- Public-private partnership - 7 Board Members – City and customer appointees
- Credit enhancement initially from the City through subordinated debt
- Long-term customer agreements
- 80% heating market share/65% cooling market share

Private Nonprofit Business Model

DISTRICT ENERGY ST. PAUL™

- 100% debt financed – cost of capital based upon credit worthiness of customers
  - S&P rated "A-"/stable
- Off-balance sheet treatment depends on customer base, board representation, and customer agreement
- Unexpected maintenance and capital costs added to the customer charges
- Cost-based rates structured to provide lowest costs
  - Approved by Board and the City
- Customers pay less for energy today than they did in 1983, when adjusting for inflation



Other Nonprofit District Energy Examples

Michael Ahern, SVP System Development Group
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Burlington, VT

Burlington District Energy

- Waste heat from the McNeil Generating Station to supply steam to the University of Vermont Medical Center and campus
- Public-private partnership with Burlington Electric Department, Vermont Gas Systems, and the City of Burlington
- Supporting the City of Burlington's Net Zero initiative
- 191,000 MMBTU per year of renewable thermal energy (~95% of UVMMC's use)
- Eliminates approximately 14,000 tons of CO_2 annually, more than 16% of Burlington's commercial sector natural-gas related carbon emissions

Business and Financing Structure

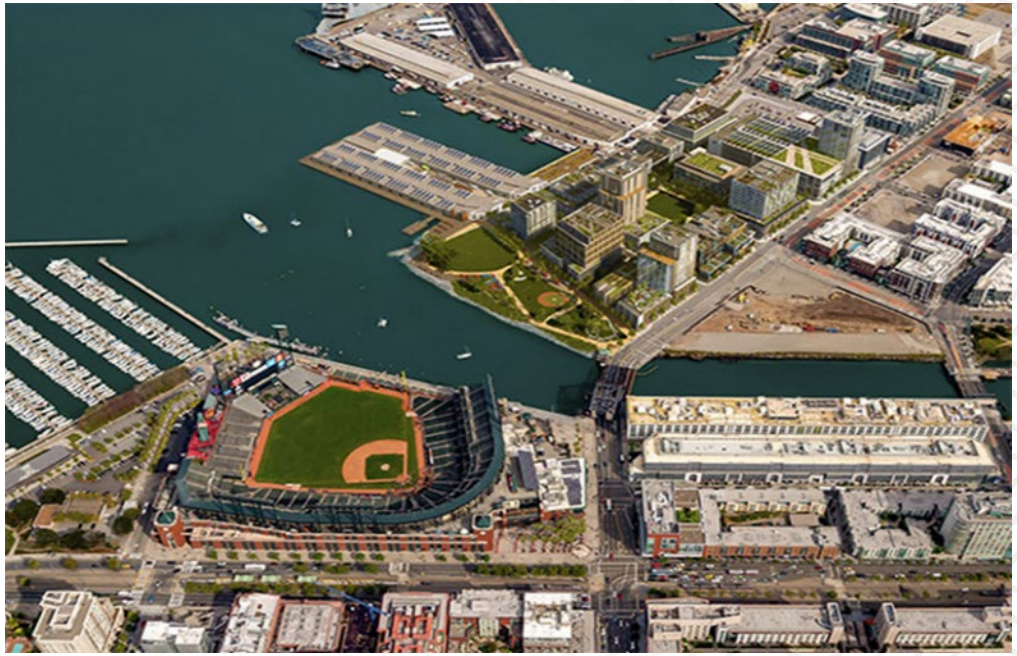
- Formed stand-alone 501(c)(3) non-profit with City support (relieving the burdens of government) with non-profit status approved by the IRS in early 2023
- Non-profit status will allow for utilization of 501(c)(3) and private activity bonds (more flexibility to serve future customers)
- Received federally directed spending grant ($5.16mm)
- Pursuing additional low interest long term loan from State Treasurer program
- 100% debt-financed based upon long-term energy service agreements with customers and energy source

San Francisco, CA

Mission Rock Utilities

MRU

- Mission Rock Partnership
  - SF Port, SF Giants, Tishman-Speyer Properties
- 28-acre site
- 3+ Million SF of mixed-use development
  - 40% affordable housing
- Supporting site sustainability goals
- District energy system leveraging bay water energy exchange – traditional 4-pipe heating and cooling loops
- Black water recycling system to serve all non-potable water needs



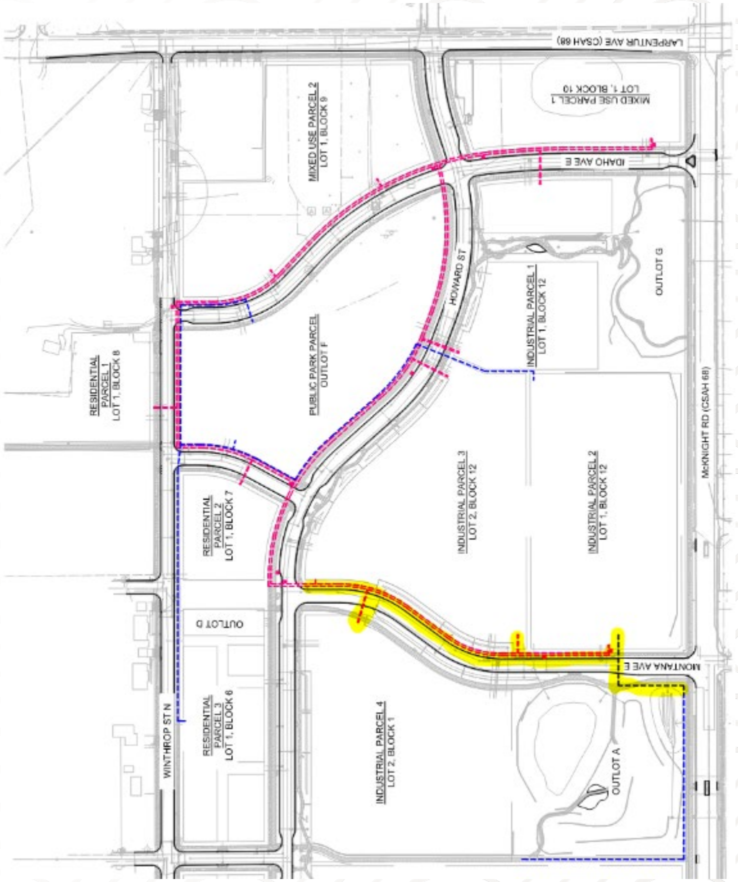
Mission Rock Utilities

MRU

- Governance from the system customers
- Agreements with individual building owners, as well as the Master Association
- Long-term customer agreements, cost-based rates
- 100% debt-financed, taxable and tax-exempt bonding
- Potential to integrate other utilities in the future

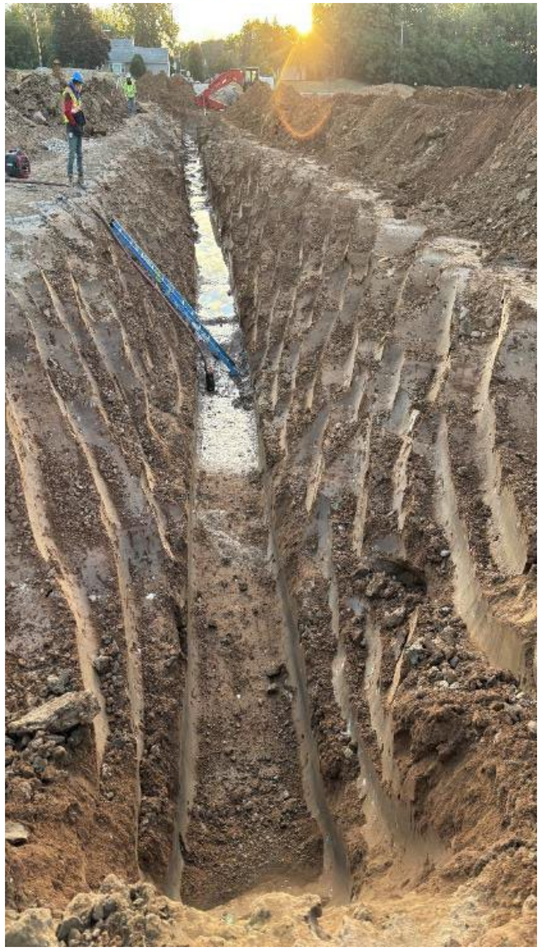
THE HEIGHTS COMMUNITY ENERGY

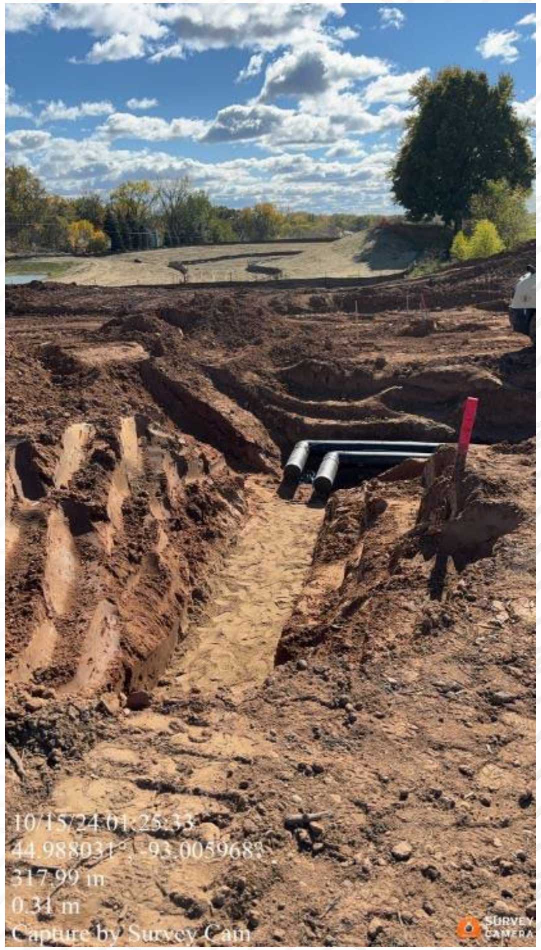
- New 501c3 nonprofit stand-alone utility business
- Aquifer Thermal Energy Storage geoexchange solution with an ambient loop
- Collaboration with the St. Paul Port Authority and City of St. Paul
- ~1M SF of mixed-use development
- 100% debt-financed
- MNCIFA loan to bridge between initial construction and IRA rebate



THE HEIGHTS COMMUNITY ENERGY

- 10 buildings served at full buildout
- ~ 1.2 million square feet
- Peak loads of ~800 tons and 9.5 MMBtu/hr
- Multi-family residential & light industrial
- Underground distribution construction in 2024 & 2025
- Wellfield construction 2026 – 2027





Longfellow Community Energy

- Stand-alone 501c3 private non-profit business
- Geo-exchange based energy system with an ambient loop
- 100% debt-financed
- Targeted for construction in late 2026/early 2027
- Initial Customers
  - 2800 East Lake St. – US Bank site (3 buildings)
  - Coliseum (already renovated and geoexchange-compatible)
- Other prospective early customers
  - Hennepin County Library
  - Trinity
  - Democracy Center
  - Pangea (Moon Palace Books)
  - Several to-be-announced upcoming developments

Questions? Thank You!

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Keys to Successful TENs and Recommendations for State Policy

Existing Thermal Energy Networks Technical Conference

Department of Public Service

Mark Spurr
Legislative Director, IDEA
Principal, FVB Energy Inc.

INTERNATIONAL DISTRICT ENERGY ASSOCIATION

FVB ENERGY INC

Keys to Cost-Effective TENs/DES

- **High thermal load density**
  - Reduces capital & operating costs
- **High load diversity**
  - Reduces capital costs & energy costs
- **Right-sized high-capex capacity**
  - Heat pump-based capacity is more costly than conventional technologies
  - Substantial capital savings from using conventional technologies for peaking & backup capacity

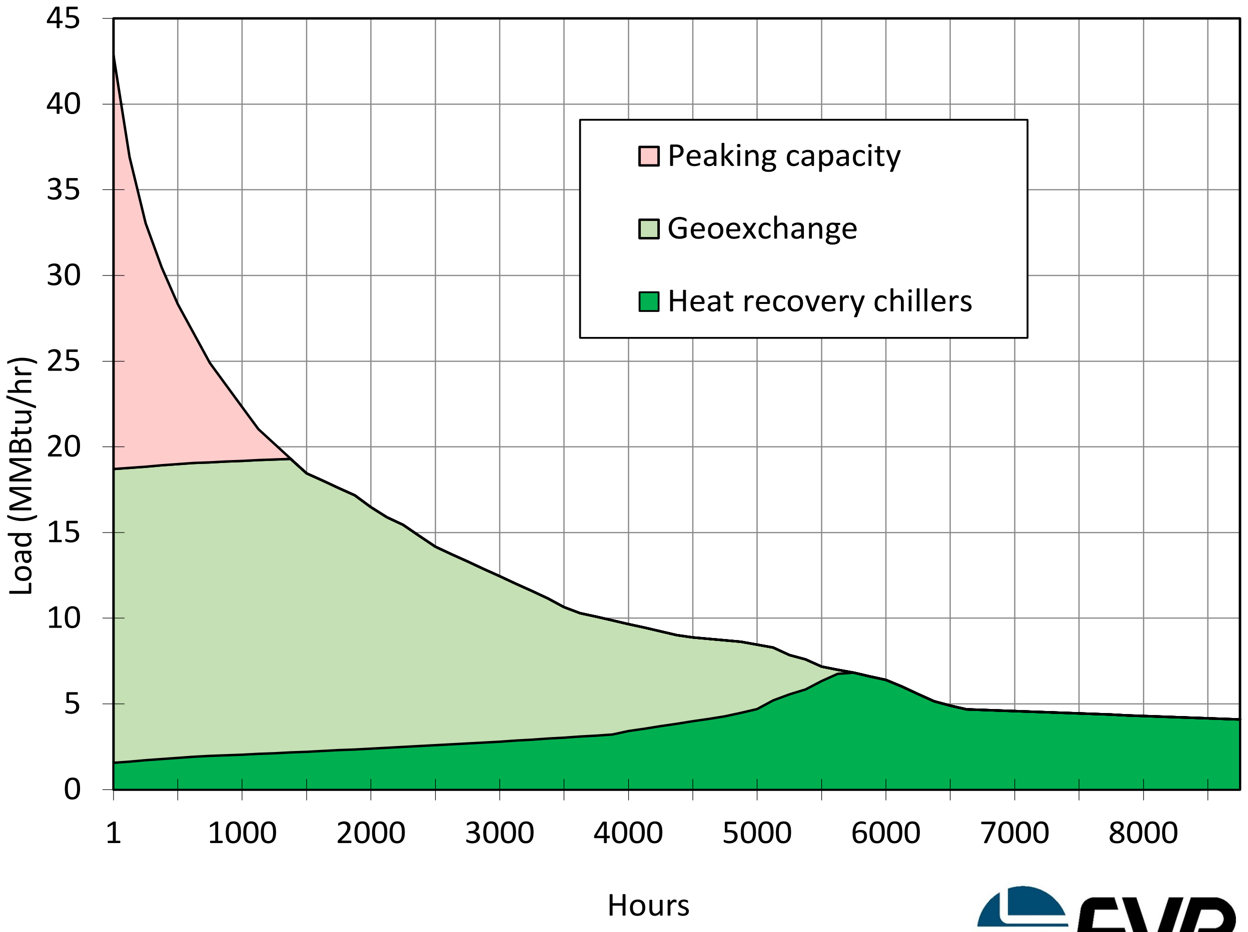
Keys to Cost-Effective TENs/DES

ENERGY PRODUCTION

Prod. Unit	MMBtu	%
Heat recovery chillers	32,836	31%
Geoexchange	60,141	57%
Peaking capacity	12,638	12%
Sum	**105,615**	**100%**

Total energy from heat pumps 88%

- **Right-sized high-capex capacity**
  - Load Duration Curves (LDCs) depict the number of annual hours that energy loads are at a given level
  - In example (heating LDC from a prospective TEN in Minnesota), heat pump capacity supplies less than 45% of the peak heating demand but provides 88% of annual heating energy



INTERNATIONAL DISTRICT ENERGY ASSOCIATION

FVB ENERGY INC

Keys to Cost-Effective TENs/DES

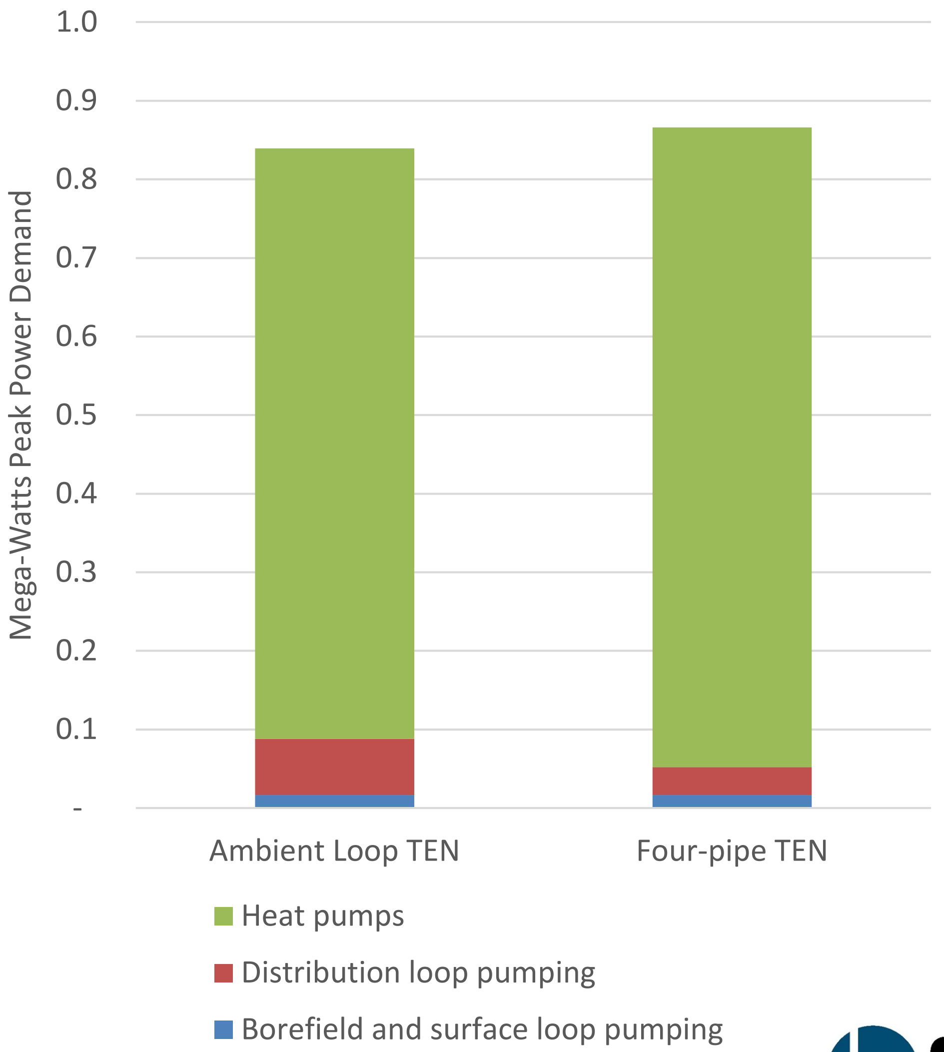
- **Service to new construction**
  - Buildings avoid capital & O&M costs of BAU
  - This benefit is eliminated with ambient loop systems
- **Rapid growth of the system**
  - Allows growth of revenue to better keep pace with capital investments
  - Reduces development risk

Keys to Cost-Effective TENs/DES

- **Maximize power grid benefits**
  - Peak power demand reduction has increasing economic value
  - Right-sizing heat pump capacity reduces peak electricity demand
  - Thermal Energy Storage (TES) reduces peak electricity demand & optimizes heat pump output

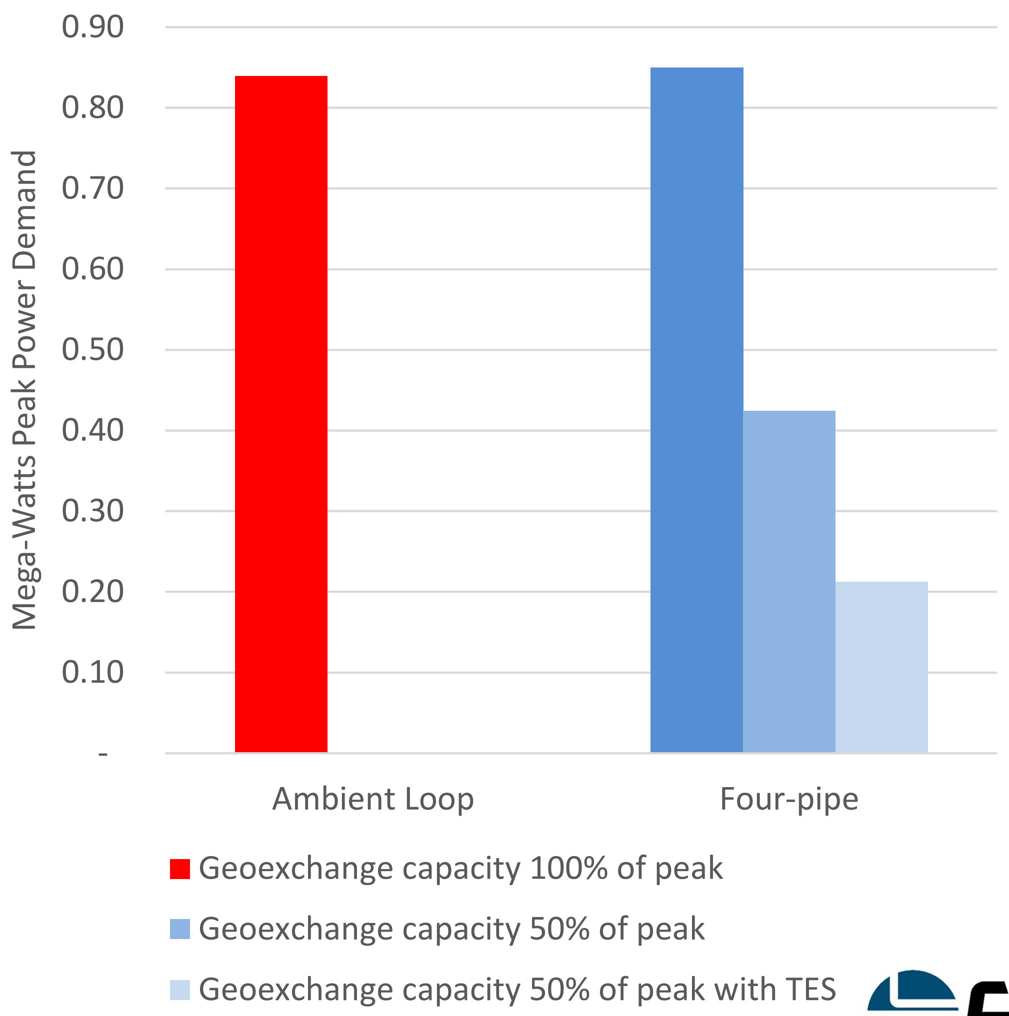
Keys to Cost-Effective TENs/DES

- **Maximize power grid benefits**
  - Low Delta T (temperature difference between supply and return) in ambient loops push up pumping power requirements
  - Centralized heat pumps in a 4G system typically have a lower efficiency because a higher hot water temperature is produced for distribution
  - Power demand for hypothetical 10 million Btu/hour load shown at right



Keys to Cost-Effective TENs/DES

- **Maximize power grid benefits**
  - Substantial peak power demand reductions are achievable with
    - Right-sized heat pump capacity
    - Thermal Energy Storage
  - Hypothetical example 10 million Btu/hour load →



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Keys to Cost-Effective TENs/DES

- **Attractive Value Proposition**
  - Customer must see TENs/DES as a better value than an in-building thermal system
  - Non-economic benefits include convenience, reliability, architectural flexibility, reduction in noise and vibration, flexibility to increase capacity, environmental benefits and risk management
  - Economic analysis must consider not only TEN/DES charges but also *customer capital, energy & O&M costs*
  - With ambient loop TENs these costs are often under-estimated and are significant

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Recommendations

- **Define TENs broadly**
- **Encourage projects that take advantage of the keys to successful TENs**
- **Encourage integration of new TENs with existing DES**
- **Recognize that TENs/DES are like people**
  - No single answer to how to configure a system
  - Must first be born before they can grow into adults
  - Hybrid systems should be allowed so that the perfect does not become the enemy of the good
- **Integrate policies governing electric grids, natural gas networks & TENs**

Recommendations

- **Solicit projects based on a competitive process**
  - The Initial Rules state that *"the Commission adopts the Staff Proposal's recommendation that utilities demonstrate the use of competitive bidding for UTEN infrastructure projects."*
  - Recommend clarifying that this can encompass comprehensive procurement approaches such as Design-Build-Own-Operate-Maintain as well as procurement of design/construction services (Engineer-Procure-Construction or Design-Build)

Recommendations

- **Consider post-pilot subsidization only to**
  - Compensate for power grid benefits
  - Provide risk mitigation support to increase TENs birth rate
- **Compensate rate base via**
  - Payments from power grid
  - Payments from TEN after growth thresholds achieved

INTERNATIONAL DISTRICT ENERGY ASSOCIATION

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Recommendations

- **Tread carefully regarding rate regulation**
  - The Initial Rules exempt a system from regulation if:
    1. *“Thermal energy is provided in a campus-style environment in which the thermal energy network and the buildings it serves, are on private property, owned by the same entity, and there is no provision of thermal energy to tenants for a fee;*
    2. *Thermal energy is provided by a system that otherwise meets the definition of a TEN but was in operation prior to July 5, 2022; or*
    3. *Thermal energy is provided by a TEN for which the Commission has granted an exemption on a project-specific basis.”*

INTERNATIONAL DISTRICT ENERGY ASSOCIATION

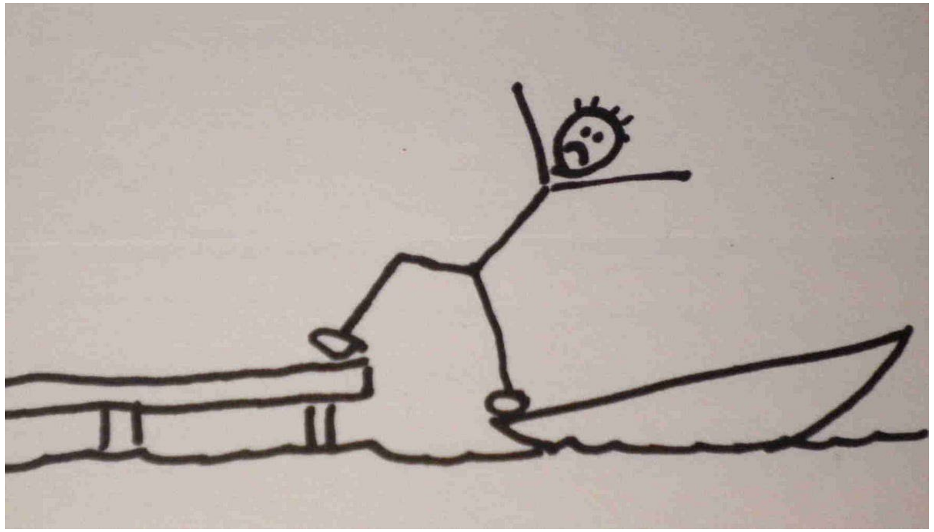
FVB ENERGY INC

Recommendations

- **Tread carefully regarding rate regulation**
  - Recommendations:
    - Provide some flexibility for campuses, given that some universities --
      - Operate on an enterprise model, in which the university utility system *does* charge a fee for thermal services (even though both are owned by the university), and/or
      - Provide thermal services to a few buildings located on the campus but are owned and operated by non-university entities
    - For project-specific exemptions, size (revenue) must be considered because regulation adds significant fixed overhead that will choke small systems

Longer Term Policy Issues

- **Natural gas system maintenance, repair & replacement**
  - To avoid societal investment in infrastructure that will eventually be phased out, there will be motivation to disallow investments in gas distribution infrastructure maintenance, repair & replacement
  - Creates balancing act between Obligation To Serve and transition from gas
  - Moving decisively away from gas will require confidence that TENs can replace natural gas service cost-effectively



Longer Term Policy Issues

- **Comprehensive electrification strategy**
  - PSC's July 18, 2024 press release states: *"The UTEN pilot projects are intended to test out various models to provide an equitable form of building electrification as opposed to individual electrification on a building-by-building basis."*
  - Given key factors such as load density and load diversity, TENs serving largely single-family residential neighborhoods have challenging economics. This is particularly the case with existing neighborhoods.
  - Recommendations
    - Assess the economics of options for building-by-building electrification, particularly for single family residential, while simultaneously implementing TENs pilot projects for comparison.
    - Implement integrated thermal/gas/electric infrastructure assessment and planning.

Wrap-Up

- Today's presentation materials will be available on the Department's Document and Matter Management system in Case 22-M-0429.
- Interested stakeholders are encouraged to subscribe to the service list for Case 22-M-0429 to receive automatic notifications regarding the proceeding.
- A general introduction to the Commission and Commission proceedings can be found here: https://dps.ny.gov/helpful-information-about-public-service-commission
- Any questions or follow-up contact Laurie Kokkinides at laurie.kokkinides@dps.ny.gov.